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UNITED STATES DEPARTMENT OF AGRICULTURE

DEPARTMENT BULLETIN No. 1181

Washington, D. C. ▼ March 15, 1924

LABOR REQUIREMENTS OF ARKANSAS CROPS

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U.S. DEPARTMENT OF AGRICULTURE

By

A. D. McNAIR, Farm Management Specialist
Bureau of Agricultural Economics

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By A. D. McNair, *Farm Management Specialist, Bureau of Agricultural Economics.*[1]

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A farmer knows, in a rough-and-ready way, the labor requirements of the crops he has grown. He knows that cotton requires more labor than corn and that there is a busy season for cotton in the spring and early summer, an idle period in August, and another busy season in the fall in harvesting the crop. This knowledge about crops, like his knowledge of the seasons and rainfall, is of utmost importance in managing the farm, but unless this knowledge is translated into figures and charts it can not be used by others who may be interested in these problems.

The purpose of this study is to put that knowledge in tangible form for all the crops grown in Arkansas. The figures, however, must be interpreted with reason and judgment, as they can not, in the nature of the case, be anything more than fair averages for a series of years. These labor data are subject to modifications due to weather, character of soil, relative weediness of land, presence of stumps and stones, length of rows, and other factors which will be discussed later.

This bulletin presents, both in chart and in tabular form, the quantity of man and horse labor expended on each of the important

[1] In cooperation with the Arkansas College of Agriculture.

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crops raised in Arkansas, distributed by months and by operations. All charts and tables are made on the basis of 10 acres except those for a few fruit and vegetable crops and for rice, which are made on the basis of 1 acre and 100 acres, respectively. For the most important crops more than one chart is given, to show the variations in quantity of labor and seasonal distribution of labor in various parts of the State. The data are for average seasons and average conditions, but suggestions are made for estimating departures from the average. Instruction is given for using the labor data in calculating the cost of production of various crops and also for calculating crop systems from the standpoint of the seasonal distribution of labor.

HOW THESE DATA MAY BE USED.

On presenting some of these data to farmers, it is found that the first impulse is to calculate costs. To illustrate: A farmer-banker to whom the data on the crop of cannery tomatoes in northwest Arkansas were shown looked at the total of 131 days of man labor and 82 days of horse labor on 10 acres of that crop and immediately began to calculate what the cost of that amount of labor would be and how it would compare with the probable returns from 10 acres of that crop.

CALCULATION OF PRODUCTION COSTS.

For the purpose of calculating cost of production, this bulletin should be exceedingly helpful, even though it is not primarily a cost study. Farmers and business men who use it for this purpose will apply current rates of wages to the quantity of man labor and current charges for the time of horses to the quantity of horse labor.

The trouble with the rough-and-ready methods of even the best farmers and business men in calculating cost of production is that the result is good only for the year for which the calculation is made. As time goes on and wages rise or fall, or other costs rise or fall, a new calculation must be made. The quantity of labor required to produce a crop, however, and the quantity of seed and manure used, are less subject to variation than prices and wages. The same labor data can be used year after year and new rates for man labor and horse labor can be applied to them. For this reason all the data in this bulletin are given in days of man labor and horse labor instead of in dollars. The cost in dollars changes from year to year, but the time in hours of labor remains substantially the same.

SEASONAL DISTRIBUTION OF LABOR.

Fully as important as production cost is the planning of the crop system and all the enterprises of the farm, so that the work may be distributed throughout the year to the end that the time of both men and teams shall be well employed. Although farmers are not primarily interested in keeping busy, it is generally true that they are anxious to find ways of increasing the spread between their farm costs and incomes. And herein lies their interest in labor distribution studies, for upon close investigation it will be often found that incomes may be increased without a corresponding increase in costs by reorganizing the farm for more efficient use of labor and power.

This bulletin furnishes the data whereby crop systems can be improved so they will properly distribute the labor in season, increase the efficiency of men and teams and add to the income by enabling a larger business to be handled with little, if any, increase in the cost of man and horse labor.

SCOPE OF STUDY.

In this bulletin the man labor and horse labor required for all the important crops of the State have been put in graphic form. For the most important crops, such as cotton and corn, several charts for different parts of the State are shown, because labor requirements on a single crop vary according to soil, latitude, and other conditions. For muskmelons, watermelons, and sweet potatoes there are two charts each for different conditions. For strawberries and blackberries there are charts for the year of planting and other charts for the bearing crops. For oats there are charts for spring-planted and fall-planted oats. For wheat there is a chart for wheat planted on oat stubble and one for wheat planted after a crop of cowpeas. For cowpea hay there is a chart for an early-planted crop and another for a late-planted or second crop after small grain.

It is believed that enough data are presented to help almost any farmer in improving his crop system. Perfect crop systems are impossible, but improvements of existing systems are practicable and necessary and the data and charts in this bulletin can be of assistance in establishing them.

METHOD OF GATHERING DATA.

In gathering these data the survey method was used. Farmers were personally interviewed and estimates of labor requirements were recorded on a form sheet of letter size, which was designed for the purpose (see p. 4). There has been much difference of opinion as to the utility of such a method for the purpose of obtaining accurate data, and many persons hold that actual daily records are more desirable.

The survey method is doubtless more accurate in regard to the total labor requirements than in regard to its seasonal distribution, because the latter is affected by variations in seasons and by the shifting of certain operations that are not fixed as to time, such as fall versus spring plowing. There is, however, an approximate average date for the performance of various operations. The charts are based on these average dates and can not show the departures from the average, but the reader, by the exercise of common sense and by the aid of the discussions in the text, can estimate departures for himself. For this purpose it will be particularly helpful to read "Interpretation of the tables," beginning on page 52.

To base the charts on actual labor records would involve careful records kept by many men in many parts of the State for several years and on all the crops discussed in this bulletin. There is no certainty that farmers would not forget occasionally to keep account of their time. Because of these difficulties in obtaining actual records, the survey method was used.

Form used for collecting data on labor requirements.

Estimate of man and horse labor on ..... acres of ..... on farm of ..... Address .....

Operations.	Crew.		Crew days.	Total days.		Jan.		Feb.		Mar.		Apr.		May.		June.		July.		Aug.		Sept.		Oct.		Nov.		Dec.	
	M.	H.		M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.	M.	H.
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Total on —— acres.....																													

At the beginning of the year 1914 the writer obtained estimates of labor on cotton and corn from 29 farmers in Faulkner County, Ark., and then asked the same farmers to keep labor records. These farmers were visited once a month and the records were inspected and collected. Table 1, which is a comparison of the data secured by the two methods, shows that the difference between the results is too small to influence in any way the conclusions drawn.

TABLE 1.—*Labor per acre on cotton and corn.*

	Records.	Estimates.	Difference.
Man-days per acre:			*Per cent.*
Cotton	9.80	10.14	+3.5
Corn	4.78	4.44	−7.1
Horse-days per acre:			
Cotton	6.05	5.76	−4.8
Corn	5.39	5.22	−3.2

CONSTRUCTION OF CHARTS.

ASSUMED YIELDS.

Since the amount of labor expended in harvesting a crop depends, in great measure, on the yield per acre, it is necessary to assume certain yields for the purpose of making these charts uniform. (See Table 2.) These yields are a little larger than average yields for all crops except hay, for which a yield of 1 ton per acre is assumed, for all kinds except Bermuda, red clover, and alfalfa hay.

TABLE 2.—*Assumed crop yields per acre.*

Crop.	Yield.	Crop.	Yield.
Cotton (seed cotton) ..... pounds..	600	Early potatoes ..... bushels..	100
Corn ..... bushels..	25	Second crop potatoes ..... do....	50
Corn silage ..... tons..	6	Cucumbers ..... do....	150
Peanuts ..... bushels..	25	Grapes ..... tons..	2
Soy-bean seed ..... do....	12–15	Peaches ..... bushels..	100
Wheat ..... do....	15	Apples ..... do....	150
Oats ..... do....	30	Sorghum molasses ..... gallons..	100
Red clover, 2 cuttings ..... tons..	1½	Sorghum cane for factory ..... tons..	6
Alfalfa, 5 cuttings ..... do....	3½	Blackberries ..... crates..	70
Bermuda hay, 2 cuttings ..... do....	2	Strawberries ..... do....	60
Other hay, 1 cutting ..... do....	1	Cherries ..... do....	100
Cannery tomatoes ..... do....	5	Keiffer pears ..... bushels..	200
Cantaloupes ..... crates..	100	Radishes ..... barrels..	60
Watermelons ..... tons..	8	Rice ..... bushels..	50
Sweet potatoes ..... bushels..	100		

If the yield of a crop is larger or smaller than the assumed yields, the labor of harvesting will be greater or less than the tables show and in a proportion which can be estimated nearly enough for practical purposes. The labor of harvesting is given separately with each chart.

In using the labor data of this bulletin, allowance should be made for abnormal conditions of weather, soil, and topography. The figures are for average weather condition and soils, and for land free from stumps and large stones. The extent of modification for these factors must be left to the judgment of the man on the ground.

Variations in labor requirements may fall in the period of preparation or cultivation without affecting the harvesting requirements; they may fall in the harvesting period only, or they may affect all operations.

THE BASIS OF ACREAGE.

All of the charts are constructed on the basis of the labor requirements of 10 acres of the designated crop, except radishes, cherries, strawberries in bearing, blackberries in bearing, and pears, for which the charts are on the basis of 1 acre. The chart for rice is on a 100-acre basis, but the scale of this chart is multiplied by 10, so that the chart is exactly as it would appear for 10 acres with the normal scale that is used for small grain.

It is believed that it is better to construct these charts on the 10-acre basis, because most farmers think in terms of 10 acres more readily than in terms of 1 acre. The rice grower, however, thinks in terms of 100 acres or more, and so do the wheat growers of the West and Northwest. For Arkansas conditions, however, the 10-acre basis is preferable for all crops but rice, on the one hand, and the very intensive crops on the other.

No matter what acreage a farmer may have in any crop, he can calculate the labor required by consulting the tables and multiplying the figures therein by the proper factor. The labor on 25 acres of wheat, for instance, would be approximately two and one-half times that on 10 acres.

THE SCALE OF REPRESENTATION.

Two scales are used for all charts made on the 10-acre basis. Cotton, corn, small grains, and all kinds of hay are charted on a scale of 5, 10, 15, etc., and fruits and vegetables are charted on a scale of 10, 20, 30, etc. Those charts that are constructed on the 1-acre basis, have a scale of 5, 10, 15, etc., and the rice chart uses a scale of 50, 100, 150, etc.

In gathering the data on labor requirements for this bulletin, it was found that an average of the estimates of 6 farmers was not materially different from an average of 10 to 12 estimates, hence 6 was the average number used.

LABOR REQUIREMENTS FOR SPECIFIED CROPS.

The amount of labor by months required for the different crops is given in Table 3 and in charts which are based on these figures. The amount of labor can be more easily seen from the charts than from the figures, but in making calculations for his own use a farmer can use the figures more easily than the charts. The charts merely visualize the figures.

The amount of labor by operations or groups of operations is given in separate tables contained in the legends of the various charts. It is desirable to have the data by operations both for cost purposes and for calculating the seasonal distribution of labor. If the yield is larger or smaller than is assumed in making the chart, it will modify the figures in the table for the harvesting period and for no other.

All figures in Table 3 are on the basis of the time necessary for one man and one horse to do the work required.

TABLE 3.—*Labor requirements on 10 acres of various crops by months.*

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Alfalfa, 5 cuttings, Mississippi County:													
Man labor	.....	.....	.....	1	7½	7½	7	6	5	2	.....	.....	36
Horse labor	.....	.....	.....	1	8½	8½	8	7	6	2	.....	.....	41
Apples, Ben Davis, Washington County:													
Man labor	8	9	10	8	7	8	7	4	6	66	3	7	143
Horse labor	3	5	6	10	10	11	10	5	4	26	1	1	92
Beans, Soy, seed, Ashley County:													
Man labor	.....	.....	3	6	4	4	.....	.....	4	.....	.....	.....	21
Horse labor	.....	.....	6	12	4	4	.....	.....	4	.....	.....	.....	30
Bermuda hay, 2 cuttings, Faulkner County:													
Man labor	.....	.....	.....	.....	.....	6	6	6	6	.....	.....	.....	24
Horse labor	.....	.....	.....	.....	.....	6	6	6	6	.....	.....	.....	24
Blackberries, 1st year, Washington County:													
Man labor	2½	9	5	5	14	18	5	.....	.....	.....	.....	2½	61
Horse labor	5	6	5	6	6	7	5	.....	.....	.....	.....	6	46
Blackberries, bearing, Washington County:													
Man labor	.....	5	5	15	15	125	175	.....	.....	.....	.....	.....	[1] 340
Horse labor	.....	.....	5	5	10	15	15	.....	.....	.....	.....	.....	50
Muskmelons:													
Crawford County—													
Man labor	1	5	10	18	18	13	42	28	.....	.....	.....	.....	135
Horse labor	2	9	12	14	9	6	22	12	.....	.....	.....	.....	86
Hemstead County—													
Man labor	1	4	17	9	20	24	30	10	.....	.....	.....	.....	115
Horse labor	2	8	20	6	11	11	27	10	.....	.....	.....	.....	95
Cherries, Washington County:													
Man labor	10	10	10	10	45	330	5	.....	.....	.....	.....	.....	[1] 420
Horse labor	.....	5	10	15	20	35	5	.....	.....	.....	.....	.....	90
Clover, red, 2 cuttings, Washington County:													
Man labor	.....	.....	1	.....	.....	8	3½	3½	.....	.....	.....	.....	16
Horse labor	.....	.....	.....	.....	.....	8	4	4	.....	.....	.....	.....	16
Clover and timothy, 1 cutting, Washington County:													
Man labor	.....	.....	1	.....	.....	4	5	.....	.....	.....	.....	.....	10
Horse labor	.....	.....	.....	.....	.....	4	6	.....	.....	.....	.....	.....	10
Corn:													
Columbia County—													
Man labor	.....	3½	5½	6	8	5	.....	.....	.....	5½	.....	.....	33½
Horse labor	.....	7	8	8	7	3½	.....	.....	.....	5	.....	.....	38½
Washington County—													
Man labor	.....	3	4	6	7	4	1	.....	.....	2	4	.....	31
Horse labor	.....	8	8	12½	10	7	½	.....	.....	2	4	.....	52
Pulaski County—													
Man labor	2	4	5	7	9	3	.....	.....	.....	7	.....	.....	37
Horse labor	5	9	11	8	8	5	.....	.....	.....	5	.....	.....	51
Chicot County—													
Man labor	1	4	6	7	8	2	.....	.....	.....	6	.....	.....	34
Horse labor	2	9	12	7½	7½	3	.....	.....	.....	6	.....	.....	47
Mississippi County—													
Man labor	1	3	6	7	8	3	.....	.....	1	3	2	.....	34
Horse labor	3	7	14	10	10	4	.....	.....	1	3	2	.....	54
June, Pulaski County—													
Man labor	.....	.....	.....	.....	.....	8	12	3	.....	2	4	.....	29
Horse labor	.....	.....	.....	.....	.....	20	12	4	.....	2	4	.....	42
Silage, Washington County—													
Man labor	.....	3	4	6	7	4	1	.....	23	.....	.....	.....	48
Horse labor	.....	8	8	12½	10	7	½	.....	17	.....	.....	.....	63
Shocked and shucked, Washington County—													
Man labor	.....	3	4	6	7	4	1	.....	9	8	9	.....	51
Horse labor	.....	8	8	12½	10	7	½	.....	.....	4	5	.....	55
Cotton:													
Columbia County—													
Man labor	.....	3	4	4½	16	12	4	1	24	23	2½	.....	94
Horse labor	.....	6	7	6½	7	7	4	.....	2½	2½	½	.....	43
Crawford County—													
Man labor	.....	2	5	5	16	10	5	.....	7	26	14	5	95
Horse labor	.....	4	9½	9½	11	7	7	.....	½	3½	2	1	55
Pulaski County—													
Man labor	6	3	3	5	19	17	14	.....	8	17	12	7	111
Horse labor	4	4	5	9	10	9	8	.....	1	2	2	1	55
Chicot County—													
Man labor	1	3	3	7	21	18	11	1	6	23	18	5	117
Horse labor	2	6	6	8½	8½	8	6	1	½	3	2	½	52

[1] The charts for these crops show the labor data for 1 acre instead of 10 acres.

TABLE 3.—*Labor requirements on 10 acres of various crops by months*—Continued.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Cotton—Continued.													
Mississippi County—													
Man labor	1	3	3	3	17	21	15	6	11	19	13	7	119
Horse labor	2	6	6	6	9	9	8	1	1	2	1	1	52
Cowpeas:													
Early, Pulaski County—													
Man labor	.....	.....	.....	6	4	.....	.....	8	.....	.....	.....	.....	18
Horse labor	.....	.....	.....	15	9	.....	.....	8	.....	.....	.....	.....	32
Second crop, Pulaski County—													
Man labor	.....	.....	.....	.....	.....	4	6	.....	4	4	.....	.....	18
Horse labor	.....	.....	.....	.....	.....	10	14	.....	4	4	.....	.....	32
Cucumbers, Crawford County:													
Man labor	.....	.....	10	21	25	50	50	.....	.....	.....	.....	.....	156
Horse labor	.....	.....	19	29	13	27	30	.....	.....	.....	.....	.....	118
Grapes, Washington County:													
Man labor	17	19	22	6	15	14	10	92	.....	.....	9	13	217
Horse labor	2	2	4	4	11	9	6	36	.....	.....	1	1	76
Oats:													
Spring, Washington County—													
Man labor	2	4	2½	.....	.....	3	2	2	.....	.....	.....	.....	15½
Horse labor	5	10½	6½	.....	.....	3	2	2	.....	.....	.....	.....	29
Fall, Pulaski County—													
Man labor	.....	.....	.....	.....	1	10	.....	.....	6	3	.....	.....	20
Horse labor	.....	.....	.....	.....	1	10	.....	.....	16	8	.....	.....	35
Oats (fall) and cowpeas, Pulaski County:													
Man labor	.....	.....	.....	.....	1	14	6	.....	10	7	.....	.....	38
Horse labor	.....	.....	.....	.....	1	20	14	.....	20	12	.....	.....	67
Oats (fall) and lespedeza, southeast Arkansas:													
Man labor	.....	.....	1	.....	1	10	1½	1½	9	9	.....	.....	33
Horse labor	.....	.....	.....	.....	1	10	3	3	19	14	.....	.....	50
Peaches, Elberta, Pike County:													
Man labor	7	7	9	3	4	4	82	.....	.....	10	.....	.....	126
Horse labor	1	1	8	3	7	7	25	.....	.....	.....	.....	.....	52
Peanuts, Spanish, Miller County:													
Man labor	.....	.....	.....	2½	8	9	2	.....	22	4	4	1½	53
Horse labor	.....	.....	.....	5	9	15	3	.....	5	5	5	3	50
Pears, Kieffer, Sebastian County:													
Man labor	5	5	5	5	.....	.....	.....	.....	100	.....	.....	.....	[1] 120
Horse labor	.....	.....	5	5	.....	.....	.....	.....	50	.....	.....	.....	60
Potatoes:													
Early, Sebastian County—													
Man labor	3	10	8	6	9	37	.....	.....	.....	.....	.....	.....	73
Horse labor	7	13	8	9	12	25	.....	.....	.....	.....	.....	.....	74
Second crop, Sebastian County—													
Man labor	.....	.....	.....	.....	.....	1	12	10	6	1	25	.....	55
Horse labor	.....	.....	.....	.....	.....	2	17	10	10	1	10	.....	50
Sweet—													
Columbia County—													
Man labor	.....	2½	5½	4	19	21	4	.....	.....	38	.....	.....	94
Horse labor	.....	5	5½	8	7½	8	3	.....	.....	26	.....	.....	63
Washington County—													
Man labor	1	2	3	7	18	31	13	.....	.....	47	3	.....	125
Horse labor	2	4	4	8½	8½	13	6	.....	.....	28	2	.....	76
Radishes, Hempstead County:													
Man labor	30	.....	100	170	.....	.....	.....	.....	.....	.....	.....	.....	[1] 300
Horse labor	40	.....	30	50	.....	.....	.....	.....	.....	.....	.....	.....	120
Rice, east Arkansas:													
Man labor	1	1	1½	2½	3	5	4½	4½	4	10	7	1½	[2] 45½
Horse labor	3	3	5½	9	9	4	2	1½	3½	11	8	3	62½
Sorghum molasses, Sebastian County:													
Man labor	.....	3	4	5	15	4	1	22	88	.....	.....	.....	142
Horse labor	.....	7	8	10	10	6	1	8	32	.....	.....	.....	82
Sorghum cane for factory, Sebastian County:													
Man labor	.....	3	4	5	15	4	1	5	16	.....	.....	.....	53
Horse labor	.....	7	8	10	10	6	1	5	15	.....	.....	.....	62
Strawberries:													
First year, Washington County—													
Man labor	2	2	30	18	30	30	28	16	2	.....	.....	2	160
Horse labor	4	4	16	14	14	13	12	8	1	.....	.....	4	90

[1] The charts for these crops show the labor data for 1 acre instead of 10 acres.
[2] The chart for rice shows the labor data for 100 acres instead of 10 acres.

TABLE 3.—*Labor requirements on 10 acres of various crops by months*—Continued.

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Total.
Strawberries—Continued.													
Bearing, Washington County—													
Man labor	.....	.....	.....	.....	300	10	.....	.....	.....	.....	.....	.....	[1] 310
Horse labor	.....	.....	.....	.....	20	10	.....	.....	.....	.....	.....	.....	30
Timothy, first year, Clay County:													
Man labor	.....	.....	.....	.....	.....	2	11	1	8	2	.....	.....	24
Horse labor	.....	.....	.....	.....	.....	2	11	2	18	5	.....	.....	38
Tomatoes, cannery, Washington County:													
Man labor	2	2	2	3	22	14	12	22	41	11	.....	.....	131
Horse labor	4	4	4	6	13	10	7	10	18	6	.....	.....	82
Watermelons:													
Crawford County—													
Man labor	2	3	18	6	9	10	2	24	1	.....	.....	.....	75
Horse labor	4	6	20	3	8	8	3	20	1	.....	.....	.....	73
Hempstead County—													
Man labor	3	4	4	3	6	13	14	30	.....	.....	.....	.....	77
Horse labor	6	8	5	3	7	7	12	30	.....	.....	.....	.....	78
Wheat:													
After oats, Washington County—													
Man labor	.....	.....	.....	.....	.....	3	4	4	3	2½	.....	.....	16½
Horse labor	.....	.....	.....	.....	.....	3	4	12	9	6	.....	.....	34
After cowpeas, Clay County—													
Man labor	.....	.....	.....	.....	.....	3½	4	.....	1½	5	.....	.....	14
Horse labor	.....	.....	.....	.....	.....	4	5	.....	4½	15½	.....	.....	29

[1] The charts for these crops show the labor data for 1 acre instead of 10 acres

COTTON.

The five cotton charts for Columbia, Crawford, Pulaski, Chicot and Mississippi Counties have strong resemblances and minor differences. (See Figs. 1, 2, 3, 4, and 5). There is a peak load of man labor in May and June, an idle time in August, and another peak load in the fall. The peak load in May and June is much higher for the alluvial bottom lands, where the large plantations are located and where negro labor is used than on the uplands where cotton is raised by white farmers on small farms. The amount of hoe work is shown by shaded areas on the Chicot County cotton chart, and it would appear similar on the Pulaski and Mississippi County charts if shown separately. The large amount of work for this one operation is very significant. It is expensive and cuts down the area that one hand or one family can handle.

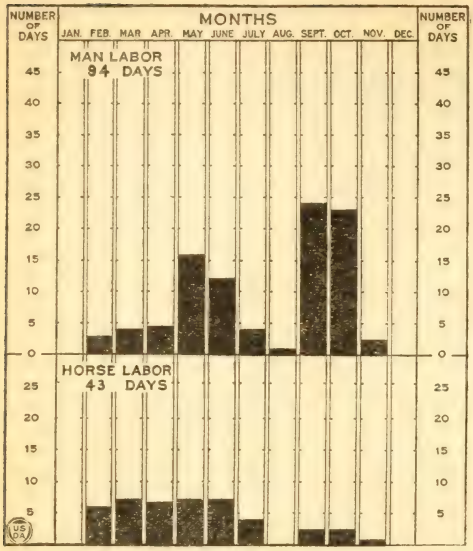


FIG. 1.—Labor on 10 acres of cotton, Columbia County.

Conditions—Light, sandy, upland soils; southwestern part of State; region of small farms operated by white people; preparation of land partly two-horse work and partly one-horse work; cultivation one-horse work; hoeing light; cotton picked out early; crops raised with less work than on other soils; assumed yield, 600 pounds seed cotton per acre; seed, 1 to 1½ bushels per acre; fertilizer, 150 to 250 pounds per acre; planted in late March, April and early May; harvested in September, October and November.

	Prepare and plant.	Cultivate.	Hoe.	Pick.	Haul.	Total.	Before harvest.	Harvest and haul.
Man days	13½	16	14	48	2½	94	43½	50½
Horse days	21	17	0	0	5	43	38	5

Man labor, except contract work, 46 days.

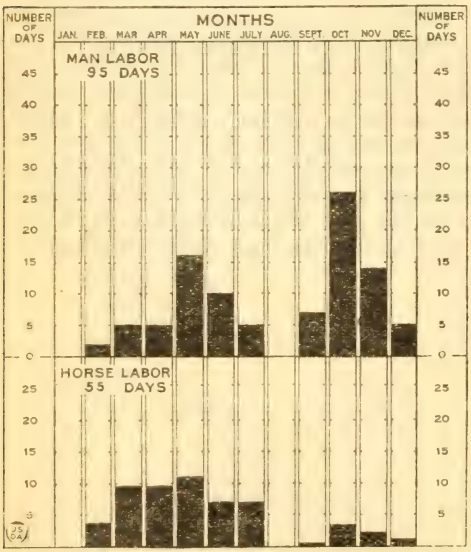


FIG. 2.—Labor on 10 acres of cotton, Crawford County.

Conditions.—Sandy upland soils but not so sandy as in Columbia County; northwestern part of State; region of small farms operated by white farmers; preparation mostly with two-horse teams; cultivation with two-horse teams; hoeing a little more than in Columbia County; picking a little later than in Columbia; man labor about the same as in Columbia but horse labor greater; assumed yield, 600 pounds seed cotton per acre; seed, 1 to 1½ bushels per acre; fertilizer, 100 to 150 pounds per acre; planted in April and early May; harvested from September to December, inclusive.

	Prepare and plant.	Cultivate.	Hoe.	Pick.	Haul.	Total.	Before harvest.	Harvest and haul.
Man days	12	12½	19	48	3½	95	43½	51½
Horse days	23	25	0	0	7	55	48	7

Man labor, except contract work, 47 days.

The total work of picking is the same in all charts: 48 days' work for picking 6,000 pounds of seed cotton on 10 acres of ground, or at the rate of 125 pounds per hand per day. The distribution of the work varies from the Columbia County chart, which shows that most of the cotton is picked in September and October, to the Pulaski County chart, which shows some picking as late as January. The rate of picking varies with the variety and condition of the cotton and with the skill of the pickers, and it may be shifted several weeks later than normal by reason of rainy weather. However, the charts are believed to represent normal conditions.

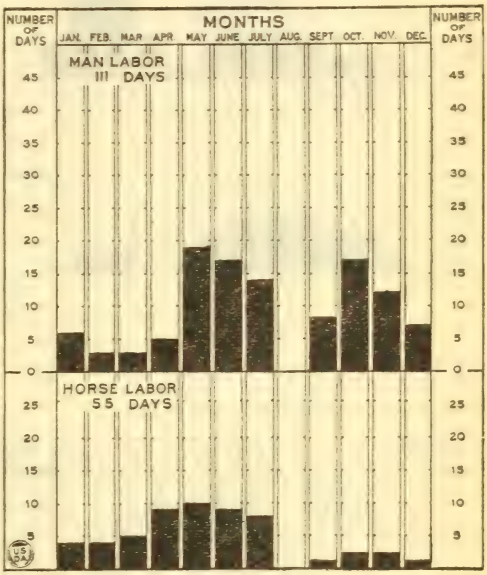


FIG. 3.—Labor on 10 acres of cotton, Pulaski County.

Conditions.—Sandy loam, alluvial soil in valley of Arkansas River; central part of State; region of large plantations operated with negro labor; two-horse teams used in preparation; cultivation mainly with two-horse cultivators; hoeing more than double that of Columbia County; horse labor about the same as in Crawford County, but man labor much greater; assumed yield, 600 pounds of seed cotton per acre; seed, 1 to 1½ bushels per acre; planted in April and early May; harvested from September to January, inclusive.

	Prepare and plant.	Cultivate.	Hoe.	Pick.	Haul.	Total.	Before harvest.	Harvest and haul.
Man days	10	16	34	48	3	111	60	51
Horse days	20	29	0	0	6	55	49	6

Man labor, except contract work, 63 days.

The horse labor on cotton runs along almost uniformly from the time work starts in the winter or early spring until the crop is laid by in July or August, but there is very little for the rest of the year. The work of hauling cotton to the gin or market is small. With a yield of 600 pounds of seed cotton per acre, a team hauls the product of 2½ acres on one load and can easily haul more as far as weight is concerned.

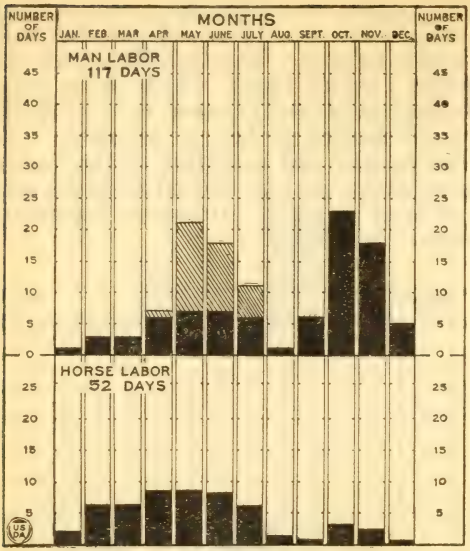


FIG. 4.—Labor on 10 acres of cotton, Chicot County.

Conditions.—Sandy loam, alluvial soil; southeastern part of State near Mississippi River; region of large plantations operated by negro labor; two-horse teams used mostly in preparation; one-horse implements used in cultivation; hoeing about the same as in Pulaski; picking finished a little earlier than in Pulaski; assumed yield, 600 pounds of seed cotton per acre; seed, 1 to 1½ bushels per acre; planted in April and early May; harvested from September to December inclusive. Shaded area shows work of hoeing.

	Prepare and plant.	Cultivate.	Hoe.	Pick.	Haul.	Total.	Before harvest.	Harvest and haul.
Man days	12	24	30	48	3	117	66	51
Horse days	22	24	0	0	6	52	46	6

Man labor, except contract work, 69 days.

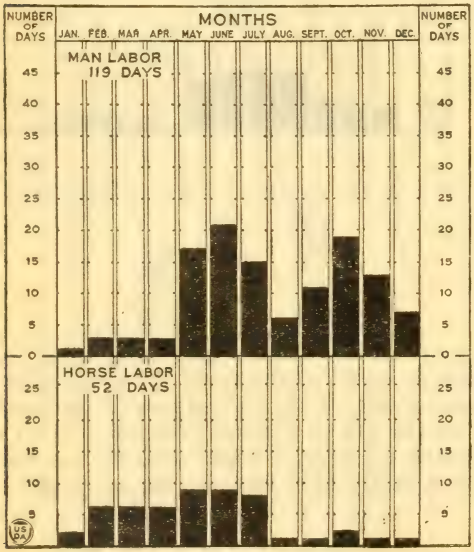


FIG. 5.—Labor on 10 acres of cotton, Mississippi County.

Conditions.—Sandy, loam soil; northeastern part of State; region of large farms and plantations operated with negro labor; two-horse implements used mainly in preparation; one-horse implements in cultivation; hoeing about the same as in Pulaski and Chicot Counties; total labor of man and horse about the same as in Pulaski and Chicot; assumed yield, 600 pounds of seed cotton per acre; seed, 1 to 1½ bushels per acre; planted in April and early May; harvested from September to December inclusive.

	Prepare and plant.	Cultivate.	Hoe.	Pick.	Haul.	Total.	Before harvest.	Harvest and haul.
Man days	11	25	32	48	3	119	68	51
Horse days	21	25	0	0	6	52	46	6

Man labor, except contract work, 71 days.

CORN.

There are eight corn charts, five of which are for early-planted corn that is harvested by snapping the ears from the standing stalks. (See Figs. 6, 7, 8, 9 and 10.) These are for the counties of Columbia, Washington, Pulaski, Chicot, and Mississippi. One is for late corn or second-crop corn following small grain in Pulaski County, harvested by the same method. (Fig. 11.) One is for corn silage in Washington County and one is for early corn in Washington County that is cut, shocked, and shucked by hand. (Figs. 12 and 13.)

It will be noticed that the peak load of horse labor on early-planted corn is in March in all counties except Washington, where it is in April. This difference is due to a difference in latitude and altitude. Corn and cotton require labor at the same time, at least until the corn is laid by. The farmer can not increase the acreage of one without decreasing the acreage of the other. They are partly competitive and partly supplementary in their demands for labor.

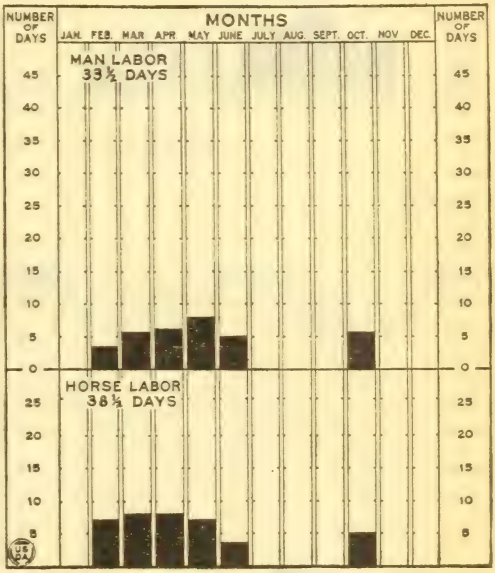


FIG. 6.—Labor on 10 acres of early corn, Columbia County.

Conditions.—Light, sandy, upland soils; southwestern part of State; region of small farms operated by white farmers; preparation partly by one and partly by two-horse implements; cultivation nearly all with one-horse implements; hoeing light; assumed yield, 25 bushels per acre; method of harvesting, snapping the ears from the standing stalks; seed, 6 to 8 pounds per acre; fertilizer, 100 to 150 pounds per acre; planted in February, March, and early April; harvested in October.

	Prepare and plant.	Cultivate.	Hoe.	Harvest.	Total.	Before harvest.	Harvest.
Man days	14	11½	2½	5½	33½	28	5½
Horse days	21	12½	0	5	38½	33½	5

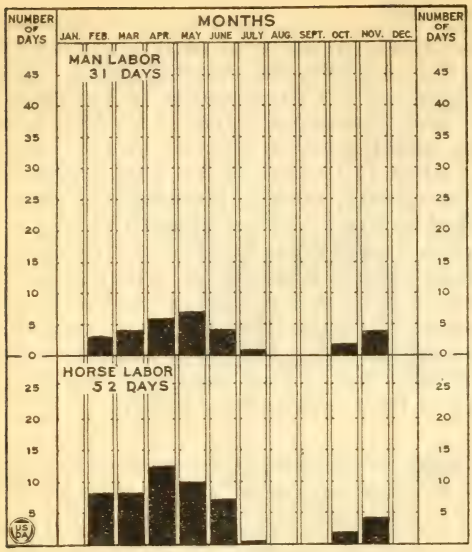


FIG. 7.—Labor on 10 acres of early corn, Washington County.

Conditions.—Sandy loam to silt loam; northwestern part of State; region of comparatively small farms operated by white farmers; preparation partly with two-horse and partly with three-horse teams; cultivation mostly with two-horse cultivators; hoeing light; assumed yield, 25 bushels per acre; man labor less than in Columbia, but horse labor much greater; method of harvesting, snapping the ears from the standing stalks; seed, 6 to 8 pounds per acre; planted in April; harvested in October and November.

	Prepare and plant.	Cultivate.	Hoe.	Harvest.	Total.	Before harvest.	Harvest.
Man days	11	11	3	6	31	25	6
Horse days	25	21	0	6	52	46	6

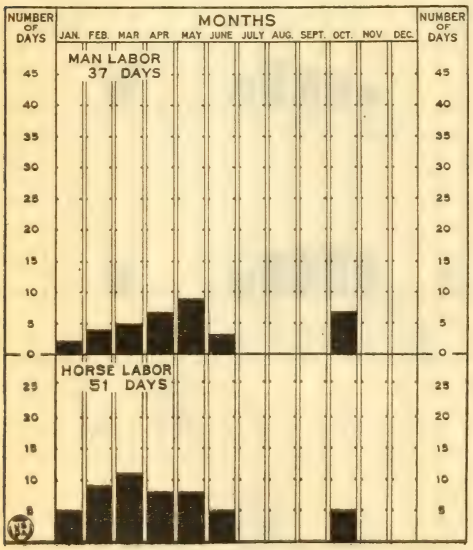


FIG. 8.—Labor on 10 acres of early corn, Pulaski County.

Conditions.—Sandy loam, alluvial soil in the valley of the Arkansas River; central part of State; region of large plantations operated with negro labor; two and three horse teams used in preparation; two-horse teams, mainly, in cultivation; hoeing nearly three-fourths of a day per acre; horse labor about the same as in Washington, but man labor greater; assumed yields, 25 bushels per acre; method of harvesting, snapping the ears from the standing stalk; seed, 6 to 8 pounds per acre; planted in late March and early April; harvested in October.

	Prepare and plant.	Cultivate.	Hoe.	Harvest.	Total.	Before harvest.	Harvest.
Man days	13	10	7	7	37	30	7
Horse days	28	18	0	5	51	46	5

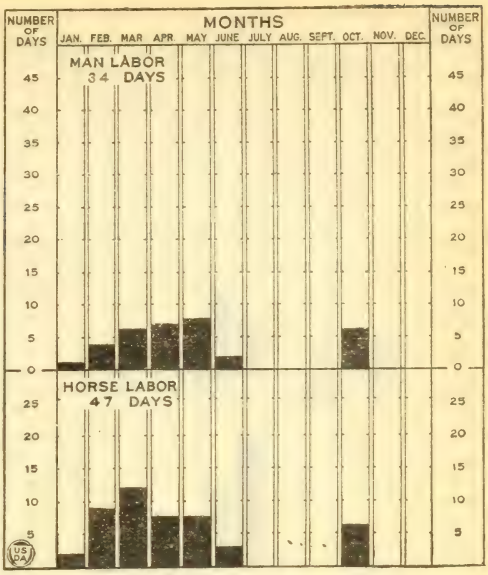


FIG. 9.—Labor on 10 acres of early corn, Chicot County.

Conditions.—Sandy loam, alluvial soil; southeastern part of the State; region of large plantations operated with negro labor; preparation with two-horse teams; cultivation with both one and two horse implements; hoeing about the same as in Pulaski; assumed yield, 25 bushels per acre; method of harvesting, snapping the ears from the standing stalks; seed, 6 to 8 pounds per acre; planted in March and April; harvested in October.

	Prepare and plant.	Cultivate.	Hoe.	Harvest.	Total.	Before harvest.	Harvest.
Man days	12	10	6	6	34	28	6
Horse days	24	17	0	6	47	41	6

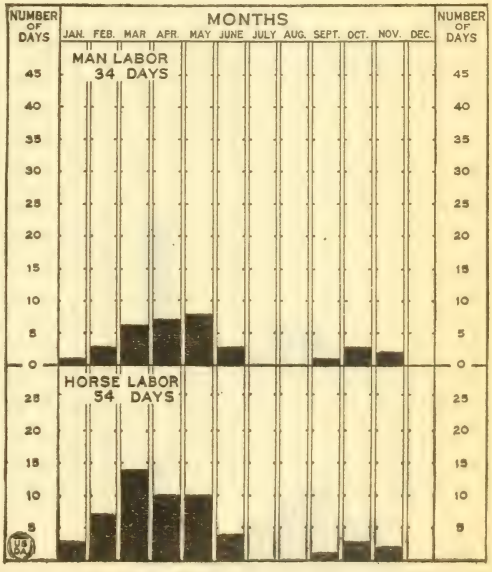


FIG. 10.—Labor on 10 acres of early corn, Mississippi County.

Conditions.—Sandy loam, alluvial soil; northeastern part of the State; region of large farms and plantations operated with negro labor; preparation with two and three horse teams; cultivation with one and two horse implements; hoeing light; method of harvesting, snapping the ears from the standing stalks; assumed yield, 25 bushels per acre; seed, 6 to 8 pounds per acre; planted in April; harvested from September to November.

	Prepare and plant.	Cultivate.	Hoe.	Harvest.	Total.	Before harvest.	Harvest.
Man days	12	12	4	6	34	28	6
Horse days	30	18	0	6	54	48	6

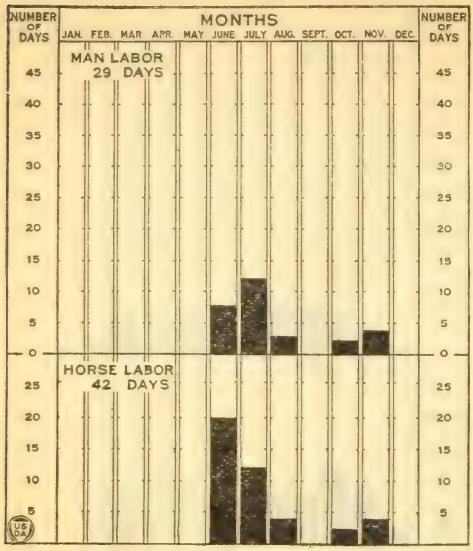


FIG. 11.—Labor on 10 acres of June corn after oats, Pulaski County.

Conditions.—Sandy loam, alluvial soil; central part of the State; region of large plantations operated with negro labor; preparation with two and three horse teams; cultivation mostly with two-horse implements; assumed yield, 25 bushels per acre; method of harvesting, by snapping the ears from the standing stalks; seed, 6 to 8 pounds per acre; planted in late June and early July; harvested in October and November.

	Prepare and plant.	Cultivate.	Hoe.	Harvest.	Total.	Before harvest.	Harvest.
Man days	10	7	6	6	29	23	6
Horse days	24	12	0	6	42	36	6

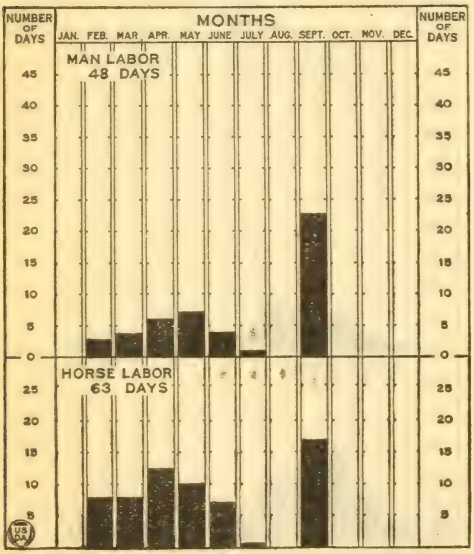


FIG. 12.—Labor on 10 acres of silage corn, Washington County.

Conditions.—Sandy loam to silt loam soil; northwestern part of the State; small farms operated by white farmers; preparation with two and three horse teams; cultivation mainly with two-horse cultivators; hoeing light; cutting with corn binder; assumed yield, 6 tons per acre; early planted corn assumed; seed, 6 to 8 pounds per acre; twine, 4 to 5 pounds per acre; planted in April; harvested in September.

	Prepare and plant.	Cultivate.	Hoe.	Cut.	Haul and fill.	Total.	Before harvest.	Harvest.
Man days	11	11	3	2	21	48	25	23
Horse days	25	21	0	6	11	63	46	17

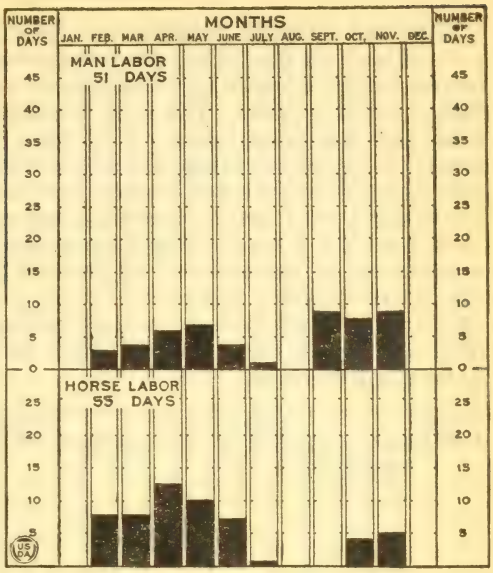


FIG. 13.—Labor on 10 acres of early corn; cut, shocked, and shucked by hand, Washington County.

Conditions.—Same as for preceding chart except in method of harvesting the crop; assumed yield, 25 bushels per acre; seed, 6 to 8 pounds per acre; cut in early September; shucked and hauled in October and November.

	Prepare and plant.	Cultivate.	Hoe.	Cut and shock.	Shuck and haul.	Total.	Before harvest.	Harvest.
Man days	11	11	3	9	17	51	25	26
Horse days	25	21	0	0	9	55	46	9

The total amount of horse labor on cotton is only slightly larger than on corn, but the large amount of man labor on cotton tends to restrict the cotton acreage below what the horse can really tend, whereas with corn the acreage can be all that the horses can tend without overburdening the men. In actual practice, therefore, the corn farmer can handle 50 to 100 per cent more acres than the cotton farmer, assuming the same equipment of men and teams. His smaller income per acre is compensated by his larger acreage.

With regard to the seasonal distribution of labor on corn, the charts show only the early-planted corn and June corn following a crop of small grain. As corn can be planted at any date between these limits, the seasonal distribution of labor would be governed by the date of planting and would be like that for early-planted corn or like that for June corn, according as the preparation is done in a hurry or is extended over considerable time. The later corn is planted the fewer the number of cultivations given. No work is assumed for marketing corn because it is usually fed at home, and even when it is marketed the time is not fixed.

SPANISH PEANUTS.

Although Spanish peanuts are grown generally over the State in a small way for feed, they are not grown at present for market except in the region adjacent to Texarkana in Miller County, Ark., and in Bowie County, Tex. The crop is grown in a small way with much hand and one-horse labor. (Fig. 14). Man labor has been reduced, however, by eliminating the hoe entirely—a thing that farmers in other localities have not learned how to do. This is accomplished by throwing a very small furrow on top of the nuts when planted and then running a smoothing harrow across the rows as the nuts are coming up, which destroys all grass in the row if the work is done at the proper time. Sometimes a very small furrow is thrown over the young plants as soon as they are up, which checks the grass but does not check the peanuts. This furrow can be leveled with the harrow a little later.

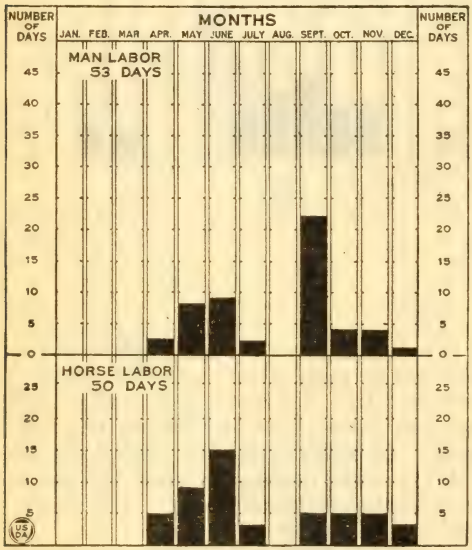


FIG. 14.—Labor on 10 acres of Spanish peanuts, Miller County.

Conditions.—Light, sandy, upland soil; southwestern part of State; small farms operated by white farmers; preparation mainly with one-horse implements; cultivation with one-horse and two-horse implements; no hoeing; harvest—turning out with plows, shaking dirt from vines, carrying to poles, and stacking in small stacks; threshed with machine thresher; haul to market, 5 miles; assumed yield, 25 bushels per acre; seed, 1 to 1½ bushels per acre; fertilizer rarely used; planted in May and early June; harvested in September.

	Prepare and plant.	Cultivate.	Harvest.	Thresh.	Market.	Total.	Before harvest.	Harvest, thresh, and market.
Man days	11	11	22½	6	2½	53	22	31
Horse days	14	18	5	8	5	50	32	18

The method of harvesting will appear crude to those who use labor-saving machinery for their crops, but no method has yet been devised that takes the place of stacking the vines by hand in small, narrow stacks around poles with the nuts turned in and the tops out. This method requires much labor in September and conflicts somewhat with cotton picking. If the hand labor could be reduced it would minimize that conflict. The crop is threshed with machine threshers in October and November and is usually marketed before the close of the year. The threshed straw is baled as it comes from the machine and is used for feed. Nearly a bale of 60 pounds of peanut straw is obtained for each bushel of nuts.

SOY BEANS FOR SEED.

The soy-bean crop is now grown only to a limited extent, but it promises to become much more important. (Fig. 15) Soy beans are raised extensively for hog feed interplanted with corn, but they are also raised alone for seed and harvested with a machine of the North Carolina type. The seed crop is planted in May and harvested in September. The variety is the Mammoth Yellow. The crop can be planted at a later date, hence the labor may come later than is shown in the chart. If the crop is hogged down there willl be no work in harvesting except that of looking after the hogs.

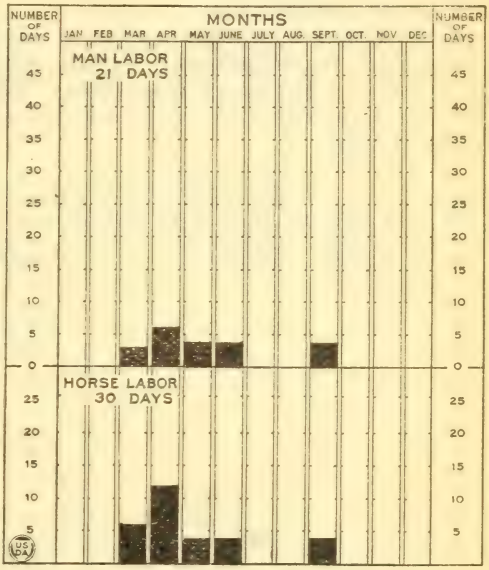


FIG. 15.—Labor on 10 acres of soy beans for seed, Ashley County.

Conditions.—Sandy loam and silt loam soil; southern part of State; large farms; preparation mostly with two-horse teams; cultivation with one-horse implements; harvested with machine stripper, North Carolina style; assumed yield, 10 to 15 bushels per acre; seed, 25 to 35 pounds per acre; Mammoth Yellow variety: planted in May; harvested in September.

	Prepare and plant.	Cultivate.	Harvest.	Total.	Before harvest.	Harvest.
Man days	11	6	4	21	17	4
Horse days	20	6	4	30	26	4

The data for this chart were obtained from W. R. Rich, who is the agriculturist of the Crossett Lumber Co., in Ashley County.

WHEAT.

Wheat is grown in considerable quantity only in the northern part of the State. The first wheat chart shows the labor on wheat that is planted on oat stubble land and the second shows it following a crop of cowpeas. (Figs. 16 and 17.) A third chart might show the labor on wheat that follows a corn crop according to the custom followed in Maryland or Kentucky, but it would be similar to the second chart. It is evident that the month in which land is prepared for wheat depends on the crop that precedes wheat. If the preceding crop is oats it is highly desirable to break the oat stubble as early as possible, as has been shown by numerous tests conducted in Kansas and Missouri.

The charts assume the method of cutting wheat with a binder and threshing it from the shock. If the wheat is first stacked or housed in barns it will require more labor than the chart shows, and the work of threshing may occur any time in late summer, fall or even in the winter.

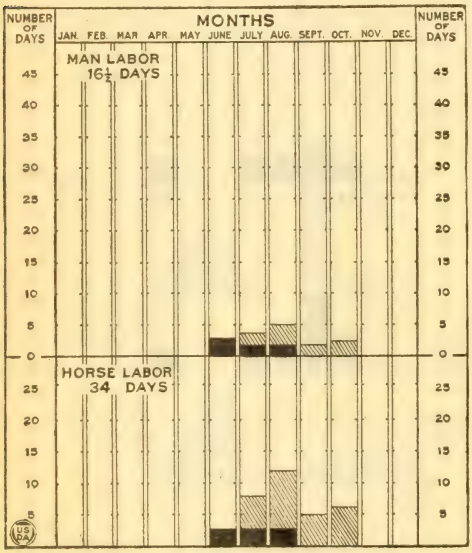


FIG. 16.—Labor on 10 acres of wheat after oats, northwest Arkansas.

Conditions.—Sandy loam to silt loam soils; northwestern part of State; region of moderate sized farms operated by white farmers; preparation mostly with three-horse teams; harvested with binder; threshed from shock; assumed yield, 15 bushels per acre; breaking of oat stubble in July and August; seed, 1 to 1½ bushels per acre; planted in October; harvested in June; threshed in July.

	Prepare and plant.	Cut and shock.	Thresh.	Total.	Before harvest.	Harvest.
Man days	9½	3	.4	16½	9½	7
Horse days	27	3	4	34	27	7

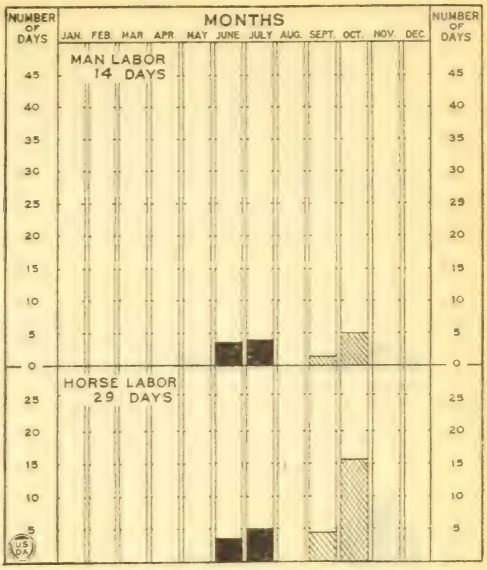


FIG. 17.—Labor on 10 acres of wheat after cowpeas, Clay County.

Conditions.—Sandy loam soil; northeastern part of State; region of medium sized farms; preparation by disking cowpea stubble instead of breaking it, mostly with three-horse teams; harvested with binder; threshed from shock; preparation shown in chart by shaded areas; harvesting and threshing shown by solid black; assumed yield, 15 bushels per acre; seed, 1 to 1½ bushels per acre; twine, 1½ to 3 pounds per acre; planted in October; harvested in June; threshed in July.

	Prepare and plant.	Cut.	Thresh.	Total.	Before harvest.	Harvest.
Man days	6½	3½	4	14	6½	7½
Horse days	20	4	5	29	20	9

OATS.

Spring oats are grown in the northern half of the State and fall oats in the southern half. (Figs. 18 and 19.) Preparation for spring oats is made in winter and early spring, but fall plowing may be practiced if desired. Where fall oats follow cowpeas the land is disked and smoothed, which requires less work than plowing.

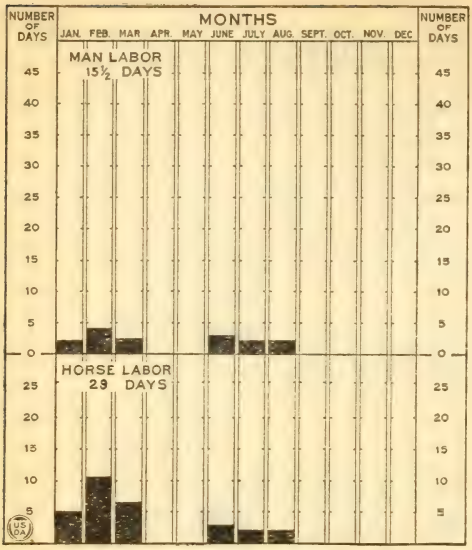


FIG. 18.—Labor on 10 acres of spring oats, Northwest Arkansas.

Conditions.—Sandy loam to silt loam soils; northwestern part of State; region of medium sized farms; preparation mostly with three-horse teams; harvested with binder; threshed from shock; assumed yield, 30 bushels per acre; seed, 2 to 2½ bushels per acre; twine, 2 to 4 pounds per acre; planted in February and March; harvested in late June; threshed in July and August.

	Prepare and plant.	Cut and shock.	Thresh.	Total.	Before harvest.	Harvest and thresh.
Man days	8½	3	4	15½	8½	7
Horse days	22	3	4	29	22	7

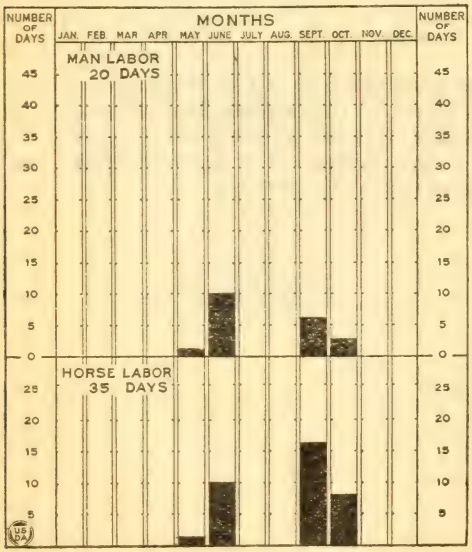


FIG. 19.—Labor on 10 acres of fall oats, Pulaski County.

Conditions.—Sandy loam, alluvial soil; central part of State; region of large plantations operated by negro labor; preparation mostly with three-horse teams; harvested with binder; threshed from shock; assumed yield, 30 bushels per acre; time of preparation depends much on what crop precedes and often comes later than shown; seed, 2 to 2½ bushels per acre; twine, 2 to 4 pounds per acre; planted in September and October; harvested in late May and early June; threshed in June to make way for a second crop.

	Prepare and plant.	Harvest.	Shock-thresh.	Total.	Before harvest.	Harvest and thresh.
Man days	9	4	7	20	9	11
Horse days	24	4	7	35	24	11

CLOVER AND TIMOTHY.

Red clover is started by sowing on wheat or oats in the spring. (Fig. 20.) It is clipped in the summer, but ordinarily makes no crop, until the next year in the region to which the red clover chart applies. If the clover is unmixed or is mixed with orchard grass it is cut in June and again the last of July or early in August. If mixed with timothy the cutting is delayed until the timothy is ready, which is the last of June or early in July. (Fig. 21.) The seasonal distribution of labor is thus different in the two cases. These crops may also be planted in the fall.

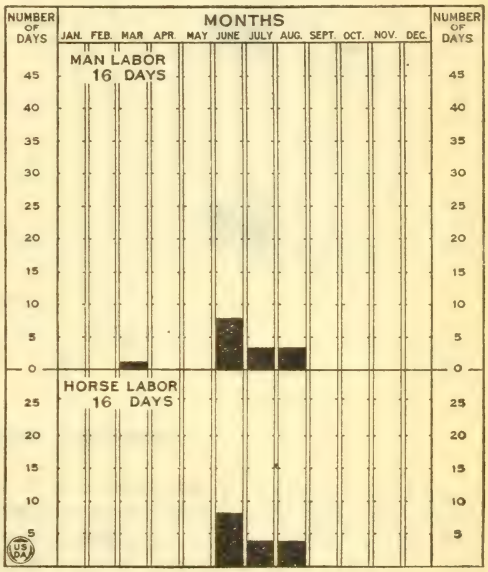


FIG. 20.—Labor on 10 acres of red clover cut twice for hay, northwestern Arkansas.

Conditions.—Northwestern part of State; region of medium sized farms operated by white people; cut with mower; raked and bunched with horse rake; pitched by hand; hauled to barn on wagons and unloaded with horse fork; assumed yield, 1 ton per acre on first cutting and half a ton on second cutting. Orchard grass is ready for cutting at the same time as red clover, hence the chart for red clover would apply to orchard grass also. Seed sown in March, 10 to 12 pounds per acre; cut first time in June of the next year; cut second time in July and August.

	Sow.	Clip.	First harvest.	Second harvest.	Total.	Before harvest.	Harvest.
Man days	1	1	8	6	16	2	14
Horse days	0	2	8	6	16	2	14

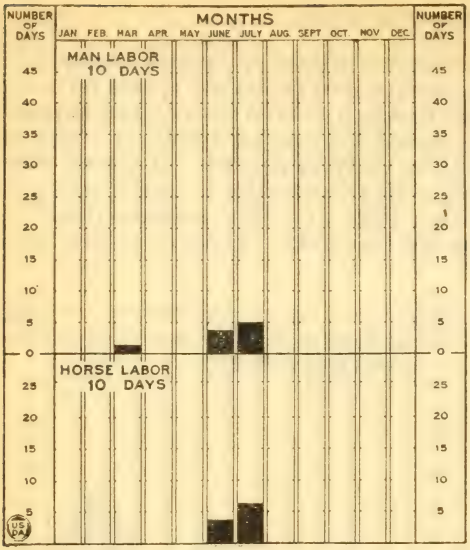


FIG. 21.—Labor on 10 acres of clover-timothy, northwest Arkansas.

Conditions.—Same as preceding chart except that there is one cutting instead of two made partly in June and partly in July; assumed yield, 1 ton per acre; 10 to 12 pounds of timothy and 4 to 5 pounds of clover sown per acre.

	Sow.	Clip.	Harvest.	Total.	Before harvest.	Harvest.
Man days	1	1	8	10	2	8
Horse days	0	2	8	10	2	8

FIRST-YEAR TIMOTHY.

In Clay County in northeastern Arkansas many farmers prepare their land for timothy as they would for wheat, and sow it alone. (Fig. 22.) This means considerable work, but the farmers say they get a better stand and a better crop. They let it stand several years, hence the work for succeeding years is only the work of harvesting and is shown by the solid black on the first-year timothy chart.

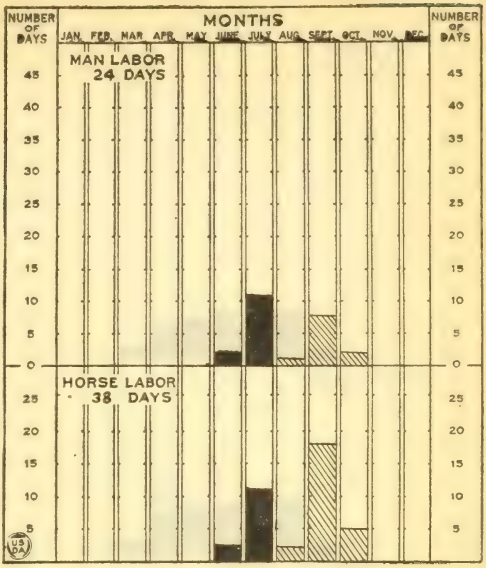


FIG. 22.—Labor on 10 acres of first-year timothy, Clay County.

Conditions.—Sandy loam soil; northeastern part of the State; region of medium sized farms; land prepared by plowing, disking and harrowing; two and three horse teams used in preparation; cut in late June and early July with mower; raked with horse rake; bunched by hand; baled in field with horse baler and hauled to barn; assumed yield, 1 ton per acre; shaded area shows preparation; seed, 15 to 25 pounds per acre; sown in September and October.

	Prepare and plant.	Cut, rake, and shock.	Haul, bale and haul.	Total.	Before harvest.	Harvest.
Man days	11	4	9	24	11	13
Horse days	25	4	9	38	25	13

ALFALFA.

That alfalfa is the king of hay crops, especially on lands suited to its growth, is doubtless true, and it certainly finds a congenial soil in Mississippi County. (Fig. 23.) Harvest begins the last of April and continues with intervals between cuttings until October. It is not attempted to show the intervals between cuttings but only the total work each month. The intervals would not fall on the same dates every year anyway. The number of cuttings is ordinarily five. The chart assumes alfalfa that is already established, hence does not include the work of preparation and sowing.

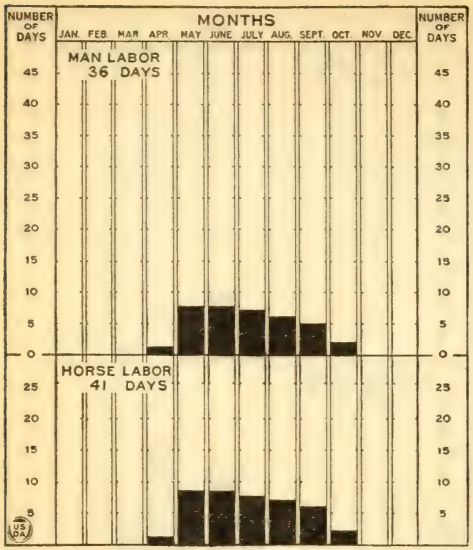


FIG. 23.—Labor on 10 acres of alfalfa, Mississippi County.

Conditions.—Northeastern part of the State; region of large farms and plantations; cut five times a year; total yield 3½ tons per acre; raked with side delivery rake; loaded with hay loader; hauled to barn loose; unloaded with horse fork; seed, 12 to 25 pounds per acre; first cutting in late April and early May; last cutting usually in October; intervals between cuttings not shown.

	Cut and rake.	Haul and store.	Total.	Harvest.
Man days	13	23	36	36
Horse days	24	17	41	41

COWPEAS.

There are two charts for cowpea hay, one for an early crop that is harvested in August and one for a later or second crop following small grains. (Figs. 24 and 25.) Cowpeas may be planted at any time, however, from late April to the end of July, and the seasonal distribution of labor varies according to the date of preparation and planting. There is a place for cowpeas planted in early May and harvested in August, because the preparation and planting come before cotton chopping and the harvest comes in the idle month of August. Rye or any small grain could well follow such a crop of cowpeas or could precede it if used as a pasture crop.

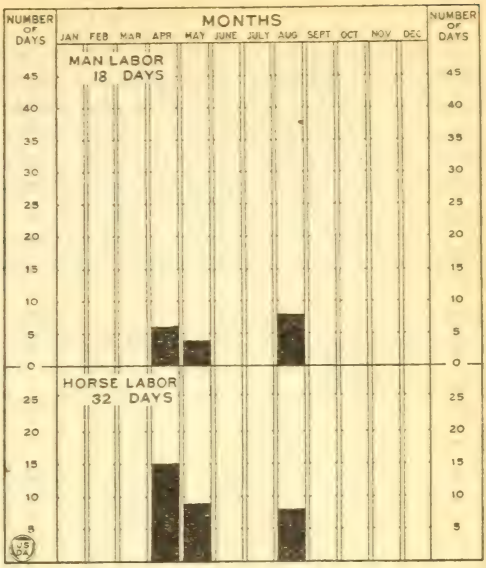


FIG. 24.—Labor on 10 acres of early cowpeas for hay, Pulaski County.

Conditions.—Sandy loam, alluvial soil; central part of State; preparation with two and three horse teams; planted in early May and harvested in August; hauled to barn loose; yield, 1 ton per acre; seed, 1 to 1½ bushels per acre.

	Prepare and plant.	Harvest.	Total.	Before harvest.	Harvest.
Man days	10	8	18	10	8
Horse days	24	8	32	24	8

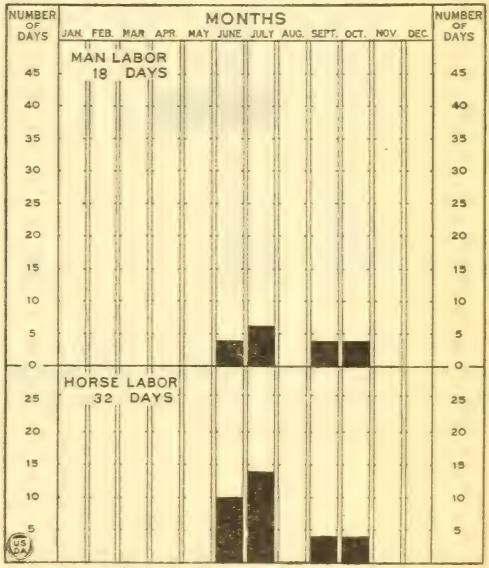


FIG. 25.—Labor on 10 acres of late cowpeas, Pulaski County.

Conditions.—Same as preceding chart except that the ground is prepared after a crop of small grain and the harvest is in September and October; seed, 1 to 1½ bushels per acre; sown in June and July.

	Prepare and plant.	Harvest.	Total.	Before harvest.	Harvest.
Man days	10	8	18	10	8
Horse days	24	8	32	24	8

BERMUDA HAY.

Bermuda grass is cut for hay in many of the river bottoms of Arkansas, Louisana, and adjacent States. (Fig. 26.) It is usually cut twice for hay each season and yields about a ton per acre at each cutting. One farmer, who raises little cotton but much corn and much Bermuda hay, says that as soon as his corn is laid by he turns his men and teams into his Bermuda meadow to make hay and that there is no conflict of labor between these crops. That is the reason why he raises much corn and little cotton. The first cutting of Bermuda would conflict with cotton work in July.

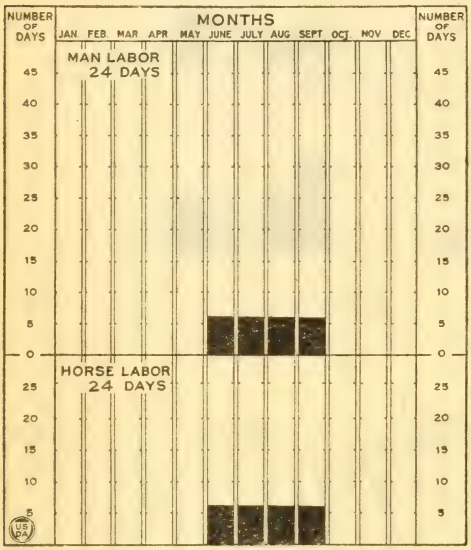


FIG. 26.—Labor on 10 acres of Bermuda hay, Faulkner County.

Conditions.—Cut twice a year; first cutting in late June and early July; second cutting in late August and early September; baled in field with horse baler; hauled to storage; yield, 1 ton per acre at each cutting. Bermuda grass makes a permanent meadow. The chart shows the average amount of work each month, but not the time of the month in which it occurs.

	Cut and rake into windrows	Bale in field.	Haul to storage.	Total.
Man days	5	15	4	24
Horse days	10	10	4	24

The work of harvesting Bermuda is not distributed with the evenness shown in the chart but as the dates shift from year to year, the total work is shown as covering the four months within whose limits the harvest occurs.

FALL OATS AND COWPEAS V. FALL OATS AND LESPEDEZA.

One of the great advantages of lespedeza as a hay crop, following small grain, and harvested the same year it is sowed, is shown in the fall oats-lespedeza chart in comparison with the fall oats-cowpeas chart that precedes it. (Figs. 27 and 28.) Lespedeza requires no work in June, when small grain is harvested and when farmers are busy with cotton and corn. It is sowed in March as red clover is sowed on a nurse crop and matures in September and October. A lespedeza meadow may be continued a number of years, because it reseeds itself from the prostrate branches that ordinarily escape the mowing machine.

The elimination of conflict of labor in June by using lespedeza instead of small grains permits farmers to cultivate more land with the same equipment and thus get a larger income with little added expense.

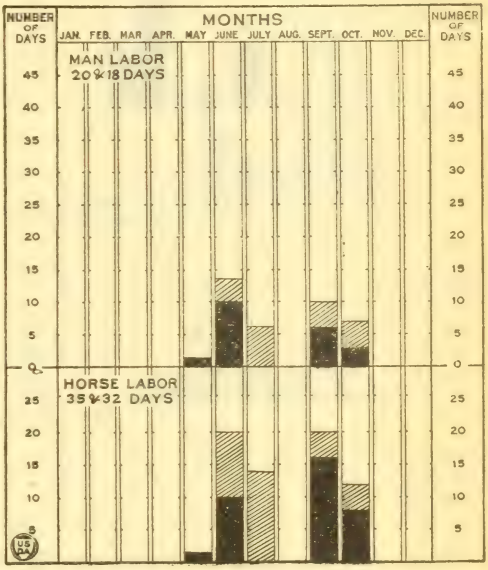


FIG. 27.—Labor on 10 acres of fall oats followed by cowpeas, Pulaski County.

Conditions.—This chart is a combination of the charts shown in Figure 19 for fall oats and in Figure 25 for late cowpeas. The work on oats is shown in solid black; that on cowpeas is shown by the shaded area; yield, 30 bushels of oats per acre and 1 ton of cowpea hay.

OATS.

	Prepare and plant.	Harvest.	Shock-thresh.	Total.	Before harvest.	Harvest.
Man days	9	4	7	20	9	11
Horse days	24	4	7	35	24	11

COWPEAS.

	Prepare and plant.	Harvest.	Total.	Before harvest.	Harvest.
Man days	10	8	18	10	8
Horse days	24	8	32	24	8

Total on both crops 38 man days and 67 horse days.

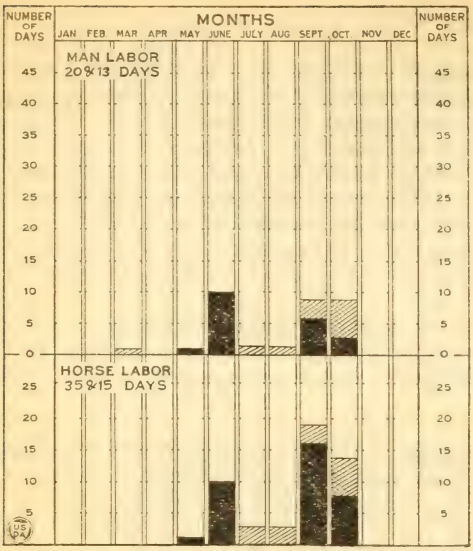


FIG. 28.—Labor on 10 acres of fall oats followed by lespedeza, southeast Arkansas.

Conditions.—This chart is a combination of the chart shown in Figure 19 for fall oats and a chart of lespedeza grown in southeast Arkansas. Lespedeza is sown in March on top of the oats; has the weeds clipped from above it in July and August and is harvested in September and October. It is assumed that the lespedeza is loaded on wagons by hand, unloaded with horse fork, and stored loose in barn. Observe the work in June and July on this chart compared with the preceding one. Yield of lespedeza, 1 ton per acre; 1 bushel of seed sown per acre for first year crop; volunteer crop the second year and later.

OATS.

	Prepare and plant.	Harvest.	Shock-thresh.	Total.	Before harvest.	Harvest and thresh.
Man days	9	4	7	20	9	11
Horse days	24	4	7	35	24	11

LESPEDEZA.

	Sow.	Clip.	Harvest.	Total.	Before harvest.	Harvest.
Man days	1	3	9	13	4	9
Horse days	0	6	9	15	6	9

The convenience of a noncompetitive or supplementary crop from the labor standpoint in comparison with a competitive crop, is an important matter.

CANNERY TOMATOES.

Practically no early tomatoes are grown in Arkansas as a market crop, at least none were grown when these data were gathered, but there is a considerable industry in growing tomatoes for cannery purposes. (Figure 29.) The early crop is staked and pruned but the cannery crop requires neither operation.

In the chart, preparation is shown as beginning in January, but it may vary from December to April. The peak loads of labor come in May when the plants are set out and in September at the height of the harvest.

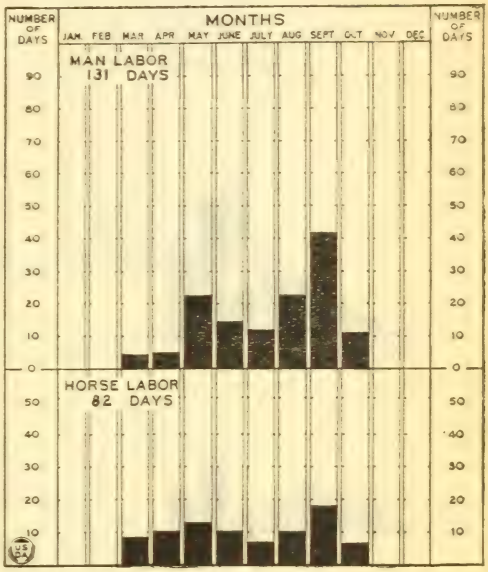


FIG. 29.—Labor on 10 acres of cannery tomatoes, northwest Arkansas.

Conditions.—Sandy loam soil; northwest Arkansas; region of medium sized farms operated by white farmers; preparation mostly with two-horse teams; fertilized by hand; cultivation with both one and two horse implements. Plants are set in May; harvest begins in August and ends in early October; yield, 5 tons or 166 bushels per acre; distance to market 4 to 5 miles; plants, 3,400 to 3,600 per acre; fertilizer, 150 to 200 pounds per acre. Canneries furnish crates.

	Prepare, fertilize, and plant.	Cultivate.	Hoe.	Spray.	Pick.	Haul.	Total.	Before harvest.	Harvest and haul.
Man days.....	28	13	14	2	57	17	131	57	74
Horse days.....	28	19	0	1	0	34	82	48	34

MUSKMELONS.

The two muskmelon charts do not look so similar as one would expect but the work of packing the crates at the association sheds was not included in the Hempstead County chart, whereas the work of packing in the field was included in the Crawford County chart. (Fig. 30 and 31.) In Hempstead the manure appears to have been applied entirely in March, whereas in Crawford, which is farther north, it was applied in March and April. These explanations account for the principal differences between the two charts,

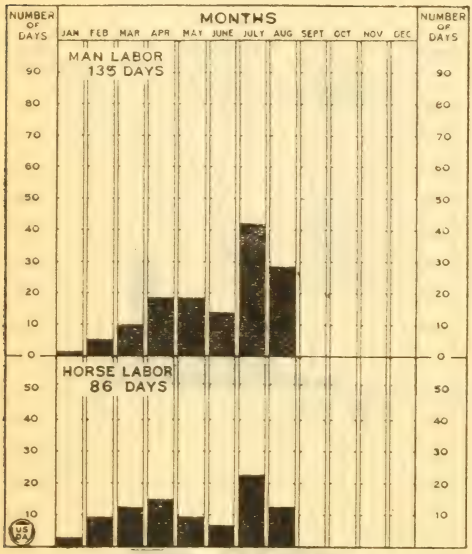


FIG. 30.—Labor on 10 acres of muskmelons, Crawford County.

Conditions.—Sandy loam, upland soil; northwest Arkansas; region of small farms operated by white farmers; 6 tons of manure and 250 pounds fertilizer per acre; land prepared with two horse implements; cultivated mostly with one-horse implements; hoeing rather heavy; cantaloupes packed in field; yield, 100 crates per acre; distance to market 4 to 5 miles; seed, 1½ to 2 pounds per acre; planted in April; harvested in July and August.

	Prepare, manure, and plant.	Cultivate.	Hoe.	Pick.	Haul.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days.....	30	14	22	48	16	5	135	71	64
Horse days.....	36	16	0	0	32	2	86	54	32

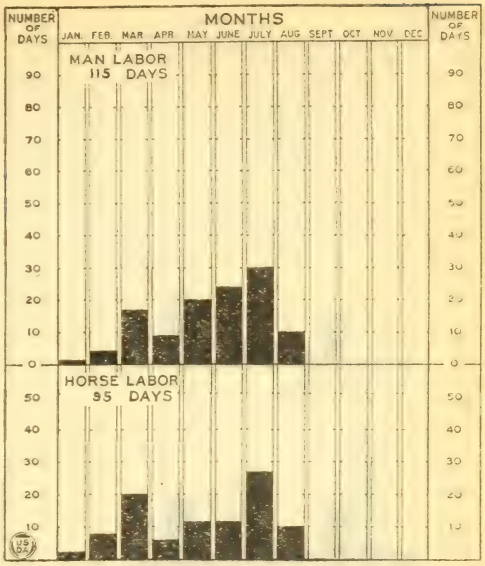


FIG. 31.—Labor on 10 acres of muskmelons, Hempstead County.

Conditions: Sandy, upland soil; southwest Arkansas; region of small farms operated by white farmers; preparation mostly with two-horse teams; manure, 6 tons per acre, applied in March; fertilizer, 250 to 500 pounds per acre; cultivation with one-horse implements; less hoeing than in Crawford County; packing done at association sheds as piecework and not included here; yield, 100 crates per acre; distance to haul, 4 to 5 miles; seed, 1½ to 2 pounds per acre; planted in April; harvested in July and August.

	Prepare, manure, and plant.	Cultivate.	Hoe.	Pick.	Haul.	Miscellaneous.	Total.	Before harvest.	Harvest.
Man days	32	22	10	20	18	13	115	77	38
Horse days	37	22	0	0	36	0	95	59	36

WATERMELONS.

The melon chart for Crawford County shows a peak load of labor in March, whereas the Hempstead County chart does not. (Figs. 32 and 33.) The difference is the result of the practice of using manure in the first case and commercial fertilizer in the the second case. The greater work of harvesting in Hempstead County is explained by a haul of 3 miles compared with a haul of 1½ miles in Crawford County.

One advantage of the watermelon crop is that it can be harvested in August, which is the idle month on most farms.

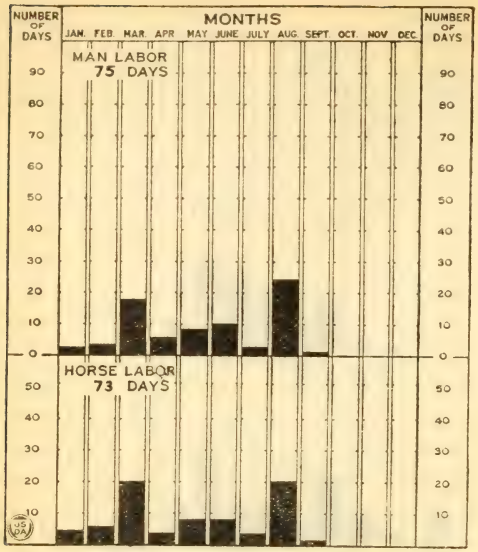


FIG. 32.—Labor on 10 acres of watermelons, Crawford County.

Conditions.—Sandy, loam soil; northwest Arkansas; region of white farmers and small farms; preparation with two-horse implements; manure applied in March, 4 tons per acre; fertilizer, 150 to 200 pounds per acre; cultivated with two-horse implements first and one-horse inplements later; yield, 8 tons per acre; distance to market, 1½ miles; seed, 1 to 3 pounds per acre; planted in April; harvested mainly in August.

	Prepare, manure, and plant.	Cultivate.	Hoe.	Gather	Haul.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days	28	11	6	16	11	3	75	48	22
Horse days	34	17	0	0	22	0	73	51	27

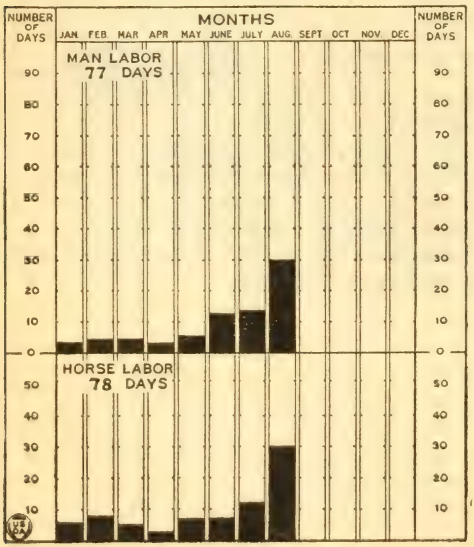


FIG. 33.—Labor on 10 acres of watermelons, Hempstead County.

Conditions.—Sandy upland soil; southwest Arkansas; white farmers on small farms; preparation mostly with two-horse implements; cultivation with one and two horse implements; no manure; 400 pounds of fertilizer per acre; yield, 8 tons per acre; distance to market, 3 miles; seed, 1 to 3 pounds per acre; planted in April; harvested in August.

	Prepare, fertilize, and plant.	Cultivate.	Hoe.	Pick.	Haul.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days	14	12	6	20	20	5	77	37	40
Horse days	22	16	0	0	40	0	78	38	40

SWEET POTATOES.

The sweet-potato charts for Columbia and Washington Counties are similar except for the larger amount of work required in the latter county. (Figs. 34 and 35.) This is entirely a matter of soil. The soil in Columbia County is light and sandy which makes all operations easier, especially setting out the plants and harvesting the crop.

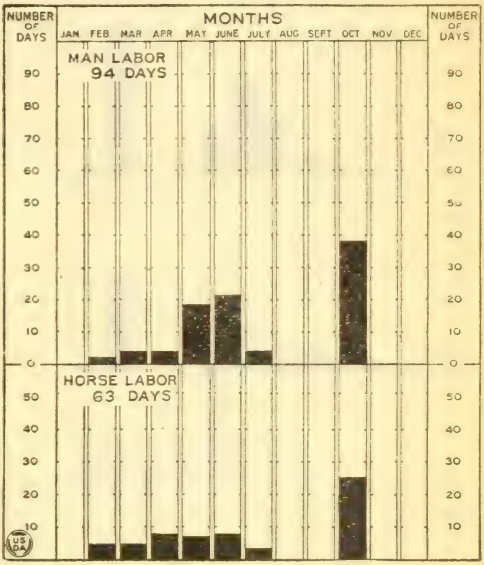


FIG. 34.—Labor on 10 acres of sweet potatoes, Columbia County.

Conditions.—Light, sandy, upland soil; southwestern part of State; white farmers; small farms; preparation partly with one-horse and partly with two-horse implements; cultivation with one-horse implements; slips planted by hand; yield, 100 bushels per acre; distance to market 4 to 5 miles; 300 to 400 pounds of commercial fertilizer used per acre; total man labor about the same as cotton, horse labor greater; potatoes plowed out and picked up by hand; seed, 4 to 5 bushels per acre or 6,000 to 10,000 plants per acre; planted in May and June; harvested in October.

	Preparation.	Plant.	Cultivate.	Hoe.	Dig and crate.	Haul.	Total.	Before harvest.	Harvest and market.
Man days	19	17½	10	9	28	10½	94	55½	38½
Horse days	27	0	10	0	5	21	63	37	26

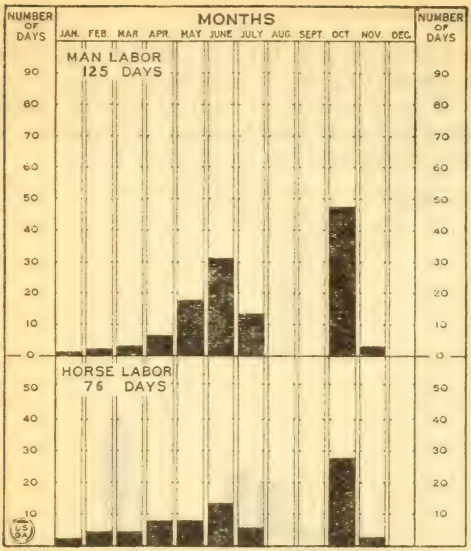


FIG. 35.—Labor on 10 acres of sweet potatoes, Washington County.

Conditions.—Sandy loam to silt loam soil; northwest Arkansas; white farmers, medium-sized farms; preparation mostly with two-horse implements but bedding the potatoes is included in the figures for preparation; cultivation with two-horse implements; yield, 100 bushels per acre; distance to market, 4 to 5 miles; nearly every operation required more work in Washington than in Columbia County, because the soil is more difficult to till; potatoes are plowed out with a plow and picked up by hand; seed, 4 to 5 bushels per acre, or 6,000 to 10,000 plants per acre; fertilizer, not generally used; slips planted in May and June; harvested mainly in October.

	Prepare.	Plant.	Cultivate.	Hoe.	Dig and crate.	Haul.	Total.	Before harvest.	Harvest and market.
Man days	19	32	7	17	39	11	125	75	50
Horse days	31	1	14	0	8	22	76	46	30

Many people will doubtless be interested in the fact that the work on cotton and that on sweet potatoes comes to about the same total in Columbia County, at least for the man labor. Hauling to market is included in both charts.

POTATOES.

The southern farmer can and often does grow two crops of potatoes on the same land in one year, and this is the practice among the commercial growers in Sebastian County and around Judsonia in White County. (Fig. 36.) This does not mean that they are grown in successive years on the same land.

The peak load of labor for the first crop is in June and for the second crop in November. The yield of potatoes is not so large in the South as in the North, but the possibility of raising a second crop, for which prices are always good, is a consideration worth mention.

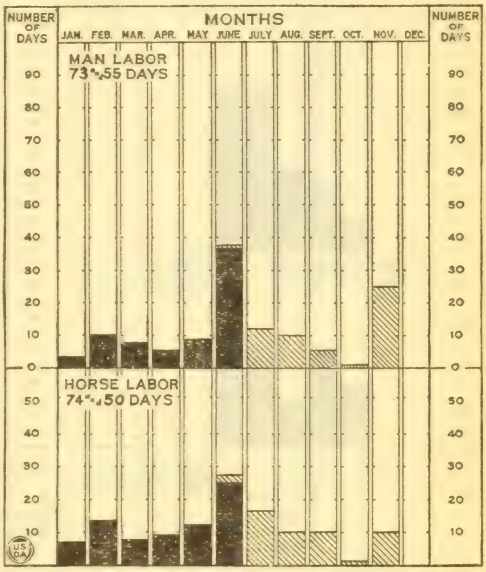


FIG. 36.—Labor on 10 acres of early potatoes followed by a second crop of potatoes, Sebastian County.

Conditions.—Sandy loam, upland soil; western part of State; region of white farmers with medium-sized farms; preparation with two and three horse implements; fertilizer applied at rate of 600 to 800 pounds per acre to first crop; cultivation with one and two horse implements; early crop planted in February and March, harvested in June; late crop planted in July and August, harvested in November. First crop hauled to market 4 or 5 miles away; second crop stored at home; solid black represents early crop and shaded area shows the late crop; assumed yield, 100 bushels per acre for first crop; second crop, 50 bushels per acre; seed, 8 to 12 bushels per acre for each crop; arsenate of lead or Paris green, 1 to 3 pounds per acre.

	Cut seed.	Prepare, fertilize, and plant.	Cultivate.	Hoe.	Spray.	Harvest.	Market.	Total.	Before harvest.	Harvest and market.
Man days	6	15	13	2	2	25	10	73	38	35
Horse days	0	26	21	0	2	5	20	74	49	25

LATE POTATOES.

	Cut seed.	Prepare, fertilize, and plant.	Cultivate.	Harvest and store.	Total.	Before harvest.	Harvest and store.
Man days	6	14	10	25	55	30	25
Horse days	0	24	16	10	50	40	10

Total on both crops; 128 man days and 124 horse days.

CUCUMBERS.

The seasonal distribution of labor on a cucumber crop does not fit very well with cotton or corn. (Fig. 37.) It is an intensive crop and is harvested in time to plant late cowpeas on the same ground, but it is doubtful whether it has the future that some other crops have.

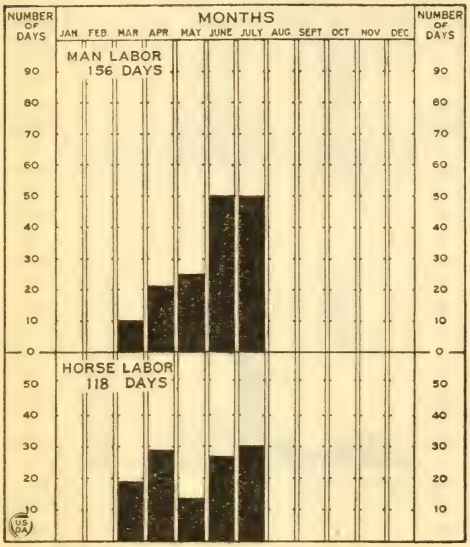


FIG. 37.—Labor on 10 acres of cucumbers, Crawford County.

Conditions.—Sandy loam soil; northwestern Arkansas; white farmers, small farms; preparation mostly with two-horse teams; manure applied at the rate of 7 tons per acre in April; cultivated with one-horse and two-horse implements; yield, 150 bushels per acre; distance to market, 4 to 5 miles; seed, 1½ to 2 pounds per acre; planted in April, harvested in June and July.

	Prepare, manure, and plant.	Cultivate.	Hoe.	Pick and pack.	Haul.	Total.	Before harvest.	Harvest and market.
Man days	29	11	22	68	26	156	62	94
Horse days	47	19	0	0	52	118	66	52

SORGHUM SIRUP.

When sorghum is made into sirup at home a large amount of work is required which usually has its peak load in September but may come earlier or later according to the date of planting and the variety grown. (Fig. 38.) If the crop is harvested and made up in August, a conflict with cotton picking is avoided but the yield is lighter with the early varieties. From the labor standpoint cotton and sorghum for sirup do not fit well together.

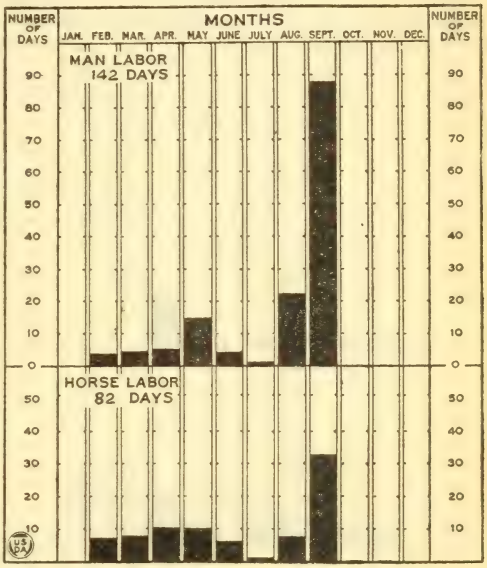


FIG. 38.—Labor on 10 acres of sorghum for sirup and made up at home, Sebastian County.

Conditions.—Sandy loam to silt loam soils; western part of State; white farmers; medium sized farms; preparation and cultivation with two-horse implements; length of haul from field to grinder one-fourth mile; yield, 6 tons of cane per acre or 100 gallons of sirup per acre; crew of four men and two horses make up 80 gallons per day work of hauling wood for cooking not included; 1 cord of good wood makes about 100 gallons of sirup; a medium early variety is assumed; a late variety would be made up in September and October; 800 to 1,000 pounds of tops per acre are also obtained; seed, 3 pounds per acre; fertilizer, 250 to 500 pounds per acre; planted about first of May; harvested in late August and September.

	Prepare and plant.	Cultivate.	Hoe.	Strip.	Cut.	Top.	Haul.	Make up.	Total.	Before harvest.	Harvest and make up.
Man days...	13	9	10	31½	11	10	7½	50	142	32	110
Horse days.	26	16	0	0	0	0	15	25	82	42	40

SORGHUM FOR FACTORY.

The labor of growing a crop of sorghum that is to be made up in a factory is just the same as for that made up at home, but differs greatly from harvest time on. (Fig. 39.) Cutting and hauling are the only operations that the farmer is concerned with after the crop is laid by. There is much less conflict with cotton in raising the crop for the factory than in making it up at home.

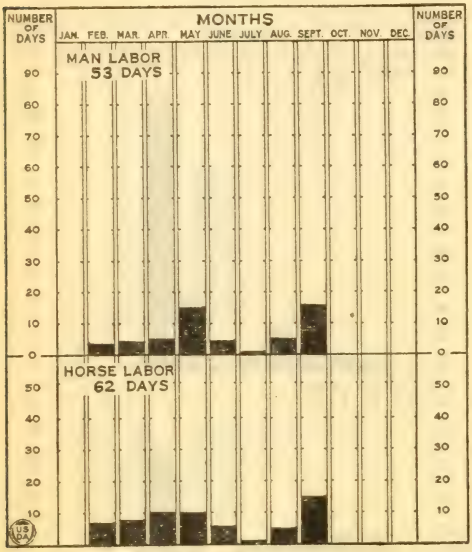


Fig. 39.—Labor on 10 acres of sorghum for factory, Sebastian County.

Conditions.—Same as preceding except the cane is cut and loaded on wagon without stripping or topping; distance to factory 2 miles; seed and fertilizer same as preceding.

	Prepare and plant.	Cultivate.	Hoe.	Cut.	Haul.	Total.	Before harvest.	Harvest and haul.
Man days	13	9	10	11	10	53	32	21
Horse days	26	16	0	0	20	62	42	20

CONCORD GRAPES.

The two striking features in the grape chart (fig. 40) are the peak load of labor in August and the large amount of man labor in the winter months compared with the small amount of horse labor. August is the month of harvest, whereas the winter months and March show the work of pruning and tying.

The fact that August is a comparatively idle month in the South makes it profitable to grow some grapes even if only for home use. As a commercial crop grapes are not of great importance, but the establishment of a grape-juice factory at Springdale is stimulating the industry in northwest Arkansas and is encouraging it in other parts of the State. There is no reason why a cotton planter could not operate a vineyard as a supplementary enterprise, but it would be a matter of growth to get men trained to do the work properly.

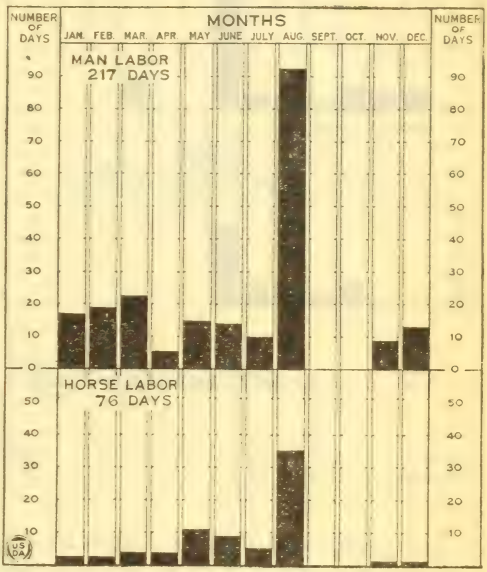


FIG. 40.—Labor on 10 acres of Concord grapes, northwestern Arkansas.

Conditions.—Gravelly soil; northwest Arkansas; region of small farms; most of the work from November to March inclusive is pruning and tying; harvest in August, when there is little other work; rows, 10 feet apart; plants, 7 to 8 feet in row; fertilizer, not generally used but probably should be; spray materials—48 pounds copper sulphate, 18 pounds arsenate of lead, and 75 pounds of lime per acre; data of this chart obtained from members of an Italian colony at Tontitown; Americans would probably perform the work in at least one-third less time than the figures show.

	Prune, tie, etc.	Spray.	Cultivate.	Hoe.	Gather and pack.	Market.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days.....	68	20	20	8	75	17	9	217	125	92
Horse days.....	2	11	27	0	1	34	1	76	41	35

ELBERTA PEACHES.

Figure 41 shows the quantity of labor on 10 acres of Elberta peaches in the famous orchard which covers about 7 square miles of the gravelly hills of Pike County in southwest Arkansas.

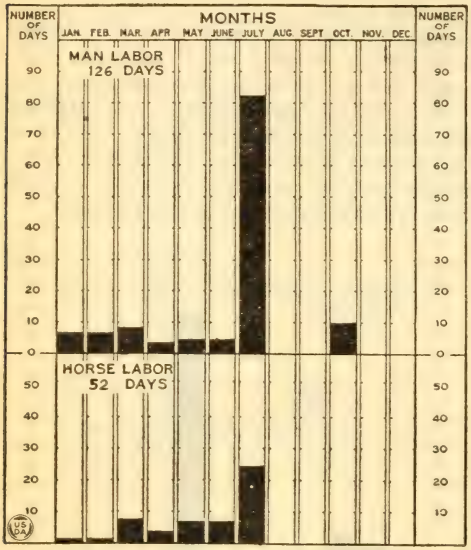


FIG. 41.—Labor on 10 acres of Elberta peaches, Pike County.

Conditions.—Gravelly soil; southwest Arkansas; harvest ordinarily from July 10 to August 1; pruning in January and February; in October suffocating the borers with paradichlorobenzine, three-fourths of an ounce per tree; other varieties of peaches would be harvested at various dates; spray materials, 16 pounds arsenate of lead, 20 gallons concentrated lime-sulphur and 50 pounds of atomic sulphur per acre. Data were furnished by Bert Johnson of the Highland orchard.

	Prune.	Spray.	Plow and cultivate.	Pick and pack.	Haul.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days	10	7	14	70	12½	12½	126	43½	82½
Horse days	0	6	21	0	25	0	52	27	25

The peak load of labor comes in July when the crop is harvested. To be more exact it extends from about July 10 to August 1, but varies according to the season.

The work in January is pruning and dormant spraying with lime-sulphur. Pruning requires only about one day of labor per acre of orchard. In October the borers are killed by the use of paradichlorobenzine, a rapid and effective method. In the work of applying the poison sprays by the dust method two men and a team cover 20 acres a day at the first application and 40 acres a day at each of the four later applications.

FIRST-YEAR BLACKBERRIES.

The work on first-year blackberries is not heavy, because there is no crop to harvest. The peak load occurs in May and June when the hoeing and weeding is done. (Fig. 42.) Most growers do all the cleaning with a hoe, but the largest grower in the community where these data were gathered thinks that weeding by hand is desirable and profitable even though it is more expensive.

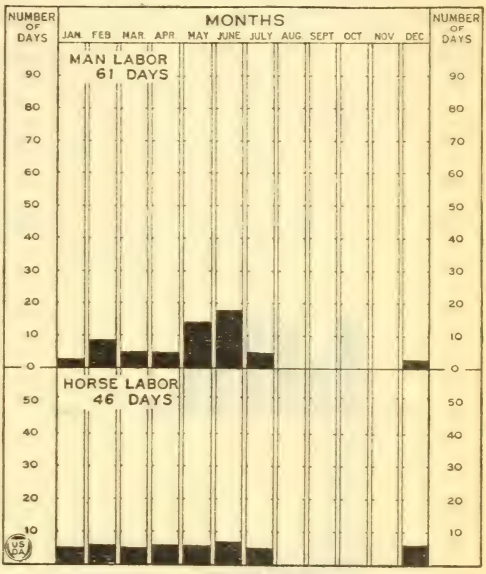


FIG. 42.—Labor on 10 acres of first-year Blackberries, northwest Arkansas.

Conditions.—Sandly loam to silt loam and slightly gravelly soil; northwestern part of State; white farmers on medium-sized farms; preparation of soil with two and three horse teams: cultivation with two-horse implements; in actual practice rows of tomatoes or corn planted between so that part of the cultivation may be charged to those crops; rows, 8 feet apart; about 5,000 plants per acre, according to farmers' practice; some authorities advise planting 8 feet by 3 feet or 1,815 plants per acre; plants set out in early spring.

	Prepare.	Plant.	Cultivate.	Hoe and weed.	Top.	Total.
Man days	9	13	11	24	4	61
Horse days	22	2	22	0	0	46

If rooted plants are used for planting there is apparently no need for weeding, but where root cuttings are used they are very slow in coming and are easily destroyed.

The chart assumes that no crop is interplanted between the blackberry rows the first year, but there is plenty of room for corn or tomatoes, and it is a common practice to plant one of these crops, usually corn.

FIRST-YEAR STRAWBERRIES.

First-year strawberries require more than double the work of first-year blackberries. (Fig. 43.) The plants are set out in March and then, as soon as grass and weeds begin to grow, they are cultivated continuously and hoed intermittently until early September. The amount of hoeing depends upon the season, being greater in rainy seasons. It is a common thing to plant the crop on new land among stumps. This involves the work of keeping the sprouts down, but practically no crab grass grows the first year.

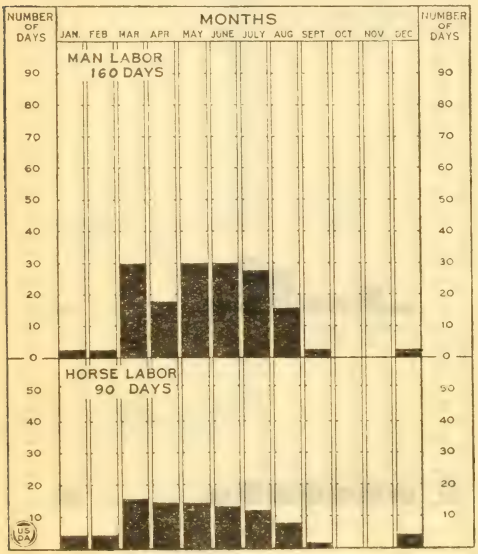


FIG. 43.—Labor on 10 acres of first-year strawberries, Washington County.

Conditions.—Sandy loam to silt loam soils; northwest Arkansas; white farmers; small farms; preparation mostly with two-horse implements; cultivated at least 12 times, partly with one horse and partly with two horses; hoed five times; fertilized with 200 pounds of fertilizer per acre; laid by in August or early September; a crop on new land among stumps requires somewhat less hoeing than old land, because it is not infested with crab grass; rows, 3½ feet apart each way or 4 feet by 3 feet; plants are set out in March.

	Prepare and fertilize.	Set.	Cultivate.	Hoe.	Total.
Man days	15	25	35	85	160
Horse days	28	0	62	0	90

BEN DAVIS APPLES.

Since apples are of many varieties, ripening at various times, and since the Ben Davis apple is the principal commercial variety in northwestern Arkansas, the chart for apples is based on that variety, which is harvested in October. (Fig. 44.) Various other varieties of apples may be harvested from June to October.

The work on apple orchards is more nearly continuous than that on any other crop except rice. Apples are a safe crop and the trees bear regularly when the orchard is properly managed. Three times only in 50 years has the crop in northwest Arkansas been destroyed by freezes.

The apple chart assumes that the work of cultivation is done with horses, but many of the larger orchardists find that the tractor is profitable for that work. It reduces the quantity of man labor materially.

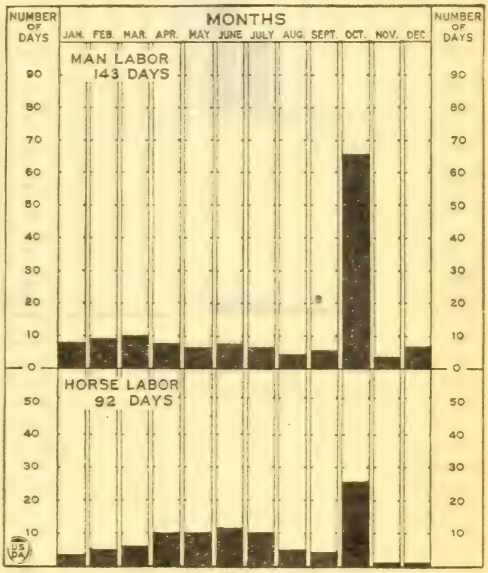


FIG. 44.—Labor on 10 acres of Ben Davis apples, northwest Arkansas.

Conditions.—Sandy loam to silt loam soil; northwest Arkansas; white farmers; medium sized farms; trees, 15 to 20 years old; cultivated with two and three horse implements; tractors are sometimes used; harvested in October (several varieties would be harvested earlier); distance to market, 3 miles; yield, 150 bushels per acre; spray materials, 20 pounds of arsenate of lead, 50 gallons concentrated lime-sulphur, 75 pounds copper sulphate, and 80 pounds of lime per acre; these amounts should be used but the average orchardist uses less.

	Prune.	Spray.	Cultivate.	Pick and pack.	Haul to market.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days.....	30	27	10	60	12	4	143	71	72
Horse days.....	11	24	25	4	24	4	92	64	28

Man labor, except picking, 113 days.

BLACKBERRIES IN BEARING.

All previous charts have shown the labor on 10 acres of each crop, but this is not possible in the case of the very intensive crops unless the scale is changed greatly. For this reason 1-acre charts of the intensive crops were made using the scale of 5, 10, 15, etc.

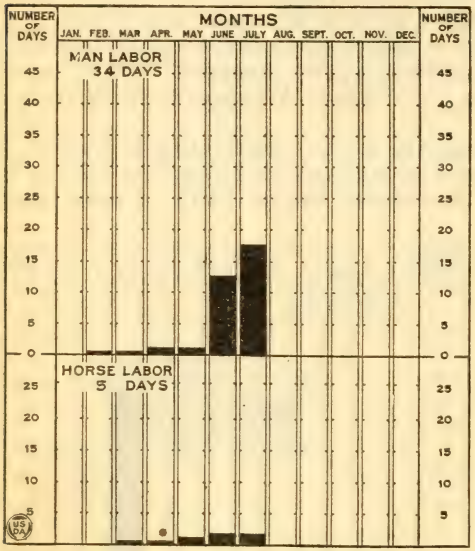


FIG. 45.—Labor on 1 acre of blackberries in bearing, northwest Arkansas.

Conditions.—Same as for first-year blackberries (see p. 43); harvest work 85 to 90 per cent of all man labor; harvest is partly in June and partly in July; no work ordinarily after harvest; old canes taken out the following February, left in the middles and disked in the ground; rows are 8 feet apart; haul 2 to 3 miles; yield 70 crates per acre.

	Remove canes.	Cultivate.	Hoe and weed.	Top.	Pick.	Haul.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days	1	1	¾	¾	29	1	½	34	4	30
Horse days	0	2	0	0	0	2	1	5	3	2

Man labor, except contract work, 5 days.

If root cuttings are planted it is the third year before a full crop of blackberries is obtained. The peak load of work comes in June and July, when the crop is harvested, and it is not customary to do any work after that time until the old canes are taken out the following February. (Fig. 45.) They are then rotten enough to break off. They are thrown on the ground between the rows and cut to pieces with a disk harrow. The Early Harvest and the Snyder are the two varieties most grown.

STRAWBERRIES IN BEARING.

The chart (fig. 46) for 1 acre of Klondyke strawberries shows that they are harvested in May. The Aroma harvest usually extends into early June. Three cultivations or plowings constitute the work required after harvest.

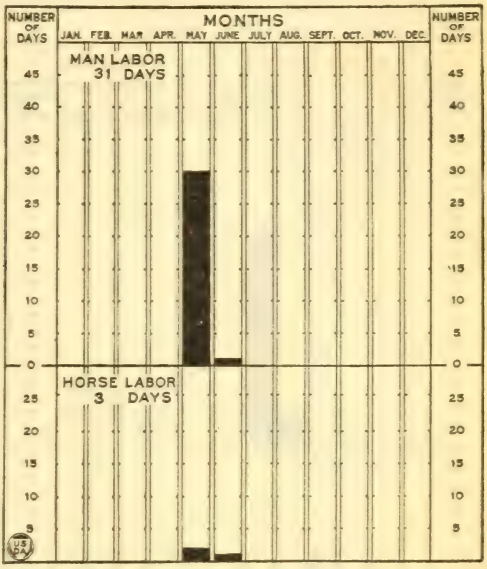


FIG. 46.—Labor on 1 acre of Klondyke strawberries in bearing, northwest Arkansas.

Conditions.—Same as for first-year strawberries (see p. 44); harvest in May, followed by about three plowings in June; harvest of Aroma variety runs into June; haul to market, 3 miles; yield, 60 crates per acre.

	Pick and pack.	Haul.	Cultivate.	Miscellaneous.	Total.	Harvest and market.	All other.
Man days	28	1	1	1	31	29	2
Horse days	0	2	1	0	3	2	1

Man labor, except contract work, 4 days.

CHERRIES.

No sweet cherries are grown in Arkansas for commercial purposes, but the Early Richmond, Montmorency, and English Morello are grown to a limited extent in the northwestern part of the State. (Fig. 47.) Harvest begins in late May and is finished by June 15, so there is little or no conflict with strawberries. Cherries are one of the most intensive crops.

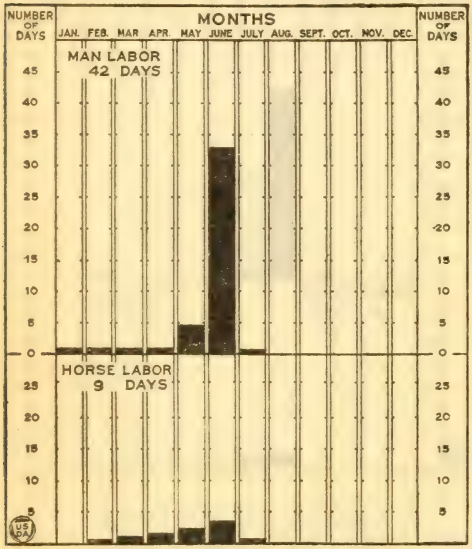


FIG. 47.—Labor on 1 acre of cherries, northwest Arkansas.

Conditions.—Same as for strawberries; trees 6 to 8 years old; varieties Early Richmond, Montmorency, and English Morello; haul 2 to 3 miles; yield, 100 crates per acre; harvested the last of May and first half of June; trees, 25 feet apart each way; spray materials, 15 pounds arsenate of lead, 35 gallons lime sulphur, 25 pounds copper sulphate, and 30 pounds of lime per acre.

	Prune.	Spray.	Cultivate.	Harvest.	Haul.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days	2	2	1	35	1	1	42	6	36
Horse days	1	1½	3	½	2	1	9	6½	2½

Man labor, except contract work, 7 days.

KIEFFER PEARS.

Pears blight badly in the Southern States and they blight more when cultivated and highly fertilized than when left in sod with little or no fertilization. The crop requires little work, therefore, except at harvest time. (Fig. 48.) Some farmers clip the grass and weeds in the orchard and some do not.

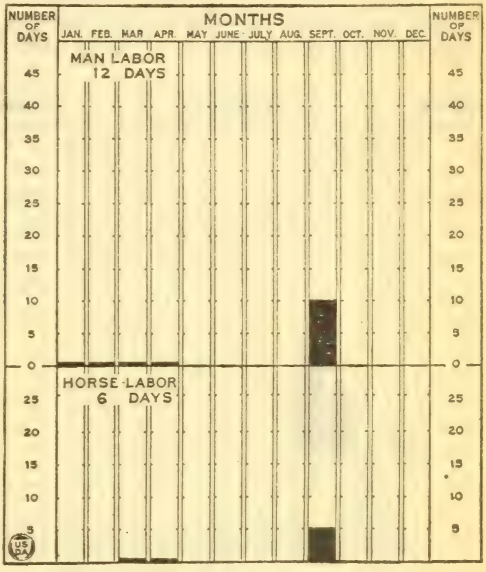


FIG. 48.—Labor on 1 acre of Kieffer pears, Sebastian County.

Conditions.—This chart is based on the work of a 6-acre orchard in Sebastian County; trees about 15 years old; no cultivation attempted; harvest in September.

	Prune.	Spray.	Pick.	Haul.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days	1	1	7	2½	½	12	2	10
Horse days	0	1	0	5	0	6	1	5

RADISHES.

The crop of radishes is unique among the commercial crops of the State in the earliness of its harvest, which begins in late March and is finished by April 15 or 20, giving ample time for planting cotton, corn, or almost any other crop. (Fig. 49.) All of the intensive crops have a high value per acre; they also necessitate a low acreage per man. Intensive farms are small if measured by the number of acres, but they may be considered large if measured by the investment or by the number of days of labor required to operate them.

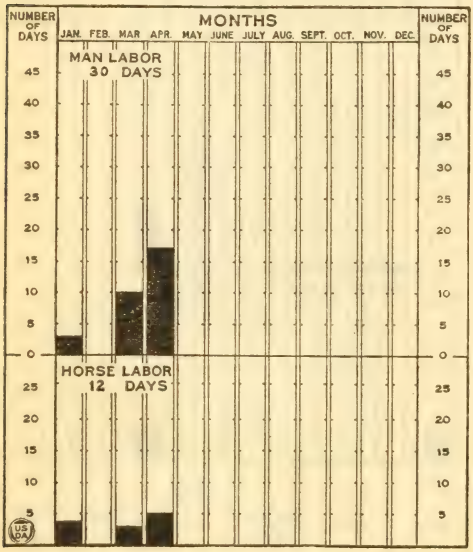


FIG. 49.—Labor on 1 acre of radishes, Hempstead County.

Conditions.—Sandy, upland soil; southwestern part of State; white farmers; small farms; manure applied broadcast, 8 to 10 tons per acre; seed sown broadcast, hence no cultivation; 10 to 15 pounds of seed per acre; yield, 60 barrels per acre; 75 pounds of ice used per barrel; haul 2 to 3 miles; nitrate of soda, 100 to 150 pounds per acre; planted in January or earlier; harvested in late March and early April.

	Prepare and plant.	Harvest and pack.	Haul.	Total.	Before harvest.	Harvest and market.
Man days	3	23	4	30	3	27
Horse days	4	0	8	12	4	8

RICE.

The rice chart is the only one for which 100 acres is used as a basis but it is comparable with the cotton, corn, hay, and grain charts, because the acreage and the scale are both 10 times those of the latter charts. (Fig. 50.)

Rice requires some work every month of the year. No sooner does the rice farmer thresh one crop than he begins plowing for the next. Horse work is assumed in this chart, but tractors are more common in the rice region than in any other part of Arkansas, and these reduce the amount of man labor required.

The two principal varieties of rice are the Early Prolific and the Blue Rose. It is becoming popular to plant both varieties, so that the harvest will not all come at one time.

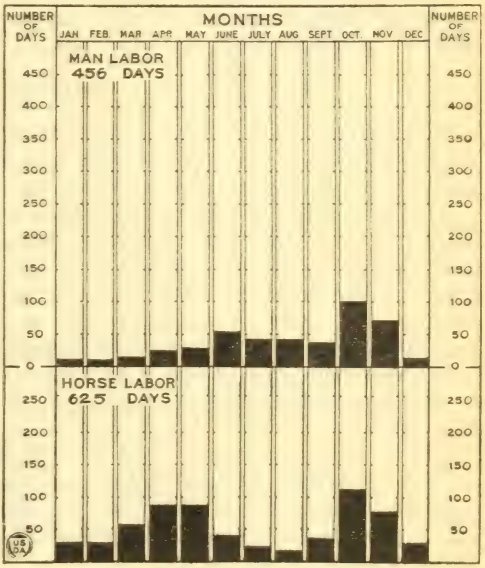


FIG. 50.—Labor on 100 acres of rice, eastern Arkansas.

Conditions.—Silty soils; east central part of State; large farms; preparation with four-horse teams, although tractors are used extensively; pumping done with oil engines; if done with steam engines the labor is more; if done with electric motors it is less; cutting sometimes done with one man and four horses, but oftener with two men and six horses; binder carries an engine that operates the machine even when the teams stop; threshing entirely from the shock; yield, 50 bushels per acre; haul 4 to 5 miles to market; seed, 1 to 3 bushels per acre; planted April 15 to early June; Early Prolific harvested in September and Blue Rose in late September and in October.

	Prepare and plant.	Pumping and levee walking.	Haul fuel.	Cut and shock.	Thresh and store.	Market.	Miscellaneous.	Total.	Before harvest.	Harvest and market.
Man days.....	70	120	30	75	111	30	20	456	240	216
Horse days.....	289	0	60	80	115	70	31	625	360	265

INTERPRETATION OF THE TABLES AND CHARTS.

As stated in the beginning, the figures in the tables and charts can not be anything more than fair averages, just as rainfall data by months are fair averages. Common sense and judgment must be used to make the tables apply to a particular farm.

The farm to which one might wish to apply the data may not be in the county where the figures were gathered, but a farmer can use the data from the county that is nearest to him and make such modifications for latitude, longitude, or average rainfall as may seem reasonable. A difference of 100 miles makes little difference in itself.

ALLOWANCE FOR SOIL.

Most of these data are for sandy or sandy loam soils. If they are to be applied to silt, clay or so-called "buckshot" soils, 10 to 40 per cent should be added for the work of preparation.

WEATHER.

Very dry weather, by making soils dry and hard, makes them difficult to break and prepare and everyone must use his own judgment as to how much to allow for this factor.

If the weather is wet in the spring when the ground should be prepared, it will shift the work to a later date. If it is very wet after row crops are planted grass and weeds grow more rapidly, which adds to the work of both cultivation and hoeing, especially to the hoeing. No rule can measure the amount of such increase. Every one must use his own judgment in regard to it. Rain at such a time will also shift some of the work from the normal time to a later time.

Wet weather during the haying and harvest of small grain increases the amount of work because the hay and grain may have to be handled an extra time, and it certainly delays the work to some extent. During cotton picking or the harvest of other crops wet weather delays the work even if it does not involve an extra handling. It is likely also to lengthen the time of work by decreasing the work accomplished in a day.

In harvesting corn and other crops a storm may so beat them down that more work is involved.

Work that is performed in the winter months is shifted according to the winter weather. In January of some years a farmer can plow 22 days out of the month and in other years no plowing at all can be done. In the former case, much plowing is done, hence the work is shifted from the normal date to an earlier date. In the latter case, it is shifted to a later date. All such contingencies must be kept in mind.

WEEDINESS OF LAND.

Some fields are much more foul than others with weeds and grasses; this makes a difference in the amount of hoework required on row crops and it may also affect some other operations. The difference between the amount of hoeing on cotton in Columbia and Pulaski Counties is partly but not entirely due to differences in weediness of land. Nut grass, Bermuda grass, and Johnson grass land involve much extra work.

STUMPS AND STONES.

There are all degrees of stumpiness and stoniness, and these things add to the amount of labor required. The figures in the tables are for smooth land; hence each farmer should add whatever he thinks is necessary for the presence of stumps and stones.

LENGTH OF ROWS.

If rows are exceedingly short, some work should be added to cover the extra time spent in turning around, but if they are about the average for the community the figures in the table will apply.

SIZE OF TEAMS OR POWER UNITS.

For each chart the conditions are printed with the chart, and one of these conditions is the team unit—whether a one-horse, two-horse, or larger team is used. It makes considerable difference in the quantity of man labor required whether the worker drives only one horse or more than one. One-horse work involves the maximum of man labor; hence the higher the wages paid the more necessary it becomes to have the worker drive as many horses as practicable, or even to drive a tractor. This necessity does not hold true, however, when the worker is a share cropper who receives half the crop or some other share as his pay. The loss of efficiency by driving one horse instead of two or more in the case of the share cropper falls on the share cropper and not on the owner who alone can change this condition.

The important point concerning size of teams or power unit is that if a farmer uses more horses or mules to the team than the table assumes, it will change, to some extent, the figures in the tables.

CHANGED PRACTICES.

Changed practices of any kind are likely to affect the quantity of labor required. The substitution of machine work for hand work or of a larger machine for a smaller one will change the amount of labor required.

ADJUSTMENT FOR YIELD.

The charts are all based on certain assumed yields which are given in Table 2. In the case of cotton, a picking rate of 125 pounds of seed cotton per hand per day has been assumed. If the picking rate is greater or less than this, the data may be changed accordingly, but if the data of the tables are used as a standard, and if the yield of cotton is 1,200 pounds of seed cotton per acre instead of the assumed 600 pounds, the time for picking may be doubled or nearly so.

If the crop is corn and the yield is 50 bushels per acre instead of 25 and if the Pulaski County corn data are used (fig. 8), the 7 days of man labor and 5 days of horse labor required for harvesting may be doubled. The same principle will hold for most other crops. It must be remembered, however, that a crop can be gathered a little faster if the yield is large than if it is small.

CALCULATION OF APPROXIMATE COST OF PRODUCTION.

Although this is not primarily a cost study, it may be used as a basis for calculating approximate costs. The labor data from the various tables may be used directly or they may be modified according to circumstances and the cost of man labor and horse labor determined on that basis.

SKELETON FORM FOR COST ACCOUNTING.

A skeleton form for cost accounting on any crop grown in the State has been designed and is given below. The estimates are for 1 acre of crops.

Man labor on crops, except contract work[1] ..... days at.... per day.....

Man labor picking, if any, ... pounds, quarts, bushels, etc., at ..... per.....

Paid manager .....

Horse labor ..... days at ..... per day .....

Implement cost at 50 to 60 cents per horse day .....

Seed ..... pounds, bushels, etc., at ..... per .....

Fertilizer ..... pounds at ..... per 100 .....

Ginning, etc., ... bales at ..... per bale .....

Baling ..... bales or tons at ..... per .....

Threshing ..... bushels at ..... per bushel .....

Packing or crating ..... at ..... per box, crate or barrel.....

Taxes and insurance .....

Depreciation of buildings and fences and upkeep of real estate at $1.50 to $2.50 per crop acre[2] .....

Package materials, twine, baling wire, ice .....

Spray materials .....

Storage .....

Miscellaneous at 50 cents per acre.....

Total operating expense.....

Credit for by-product.....

Net operating expense .....

Interest on land at ..... per cent .....

Total net cost.....

Production per acre .....

Cost per .....

To find the labor data for any particular crop and region consult the index on page 63.

[1] Contract work is picking cotton, strawberries, apples, etc., at a stated price per pound, quart, bushel. If the rate of wages is different for different operations, use the man days, by operations, given with each chart as a basis for cost.

[2] Levee taxes additional.

USE OF SKELETON FORM.

To illustrate the use of the form in the calculation of costs, data for the production of cotton in Pulaski County, Ark. (see fig. 3) have been inserted in the skeleton form. The estimate is for 1 acre yielding 600 pounds of seed cotton and turning out 200 pounds of lint and 400 pounds of cotton seed.

COST OF PRODUCING 1 ACRE OF COTTON.

1.	Man labor, except contract work 6.3 days at $1.25 per day	$7.87
2.	Man labor, picking 600 pounds seed cotton at $1 per 100 pounds	6.00
3.	Paid manager [3]	2.50
4.	Horse labor 5.5 days at $1 per day	5.50
5.	Implement cost at 50 cents per horse day (5.5×50 cents)[4]	2.75
6.	Seed, 1 bushel at 75 cents	.75
7.	Ginning ⅜ of a bale at $5.50 per bale	2.20
8.	Taxes and insurance	1.00
9.	Depreciation of buildings and fences and cost of upkeep of real estate	2.00
10.	Miscellaneous at 50 cents per acre	.50
11.	Total operating expense	31.07
12.	Credit for 400 pounds of seed at 1¼ cents per pound	5.00
	Net operating cost	26.07
14.	Interest on land, 6 per cent of $125	7.50
15.	Total net cost	33.57
16.	Production per acre 200 pounds lint	
17.	Cost per pound	.168

The following explanation will help the reader to understand the foregoing figures.

Item 1. The 6.3 man days is one-tenth of the 63 days on page 11.

Item 5. The 5.5 horse days is one-tenth of the 55 horse days on page 11.

Item 6. The implement cost varies considerably, but 50 cents per horse day is a fair average.

All other items can be estimated for each particular case. The cost of horse labor per day varies from 75 cents to more than $2, but ought not to be more than $1 for 1923. This does not mean $365 per year, but it means $1 a day for the number of days that the horse works on productive enterprises.

Whenever any item of cost is known to be different from that given in the skeleton form or when wages are different the known figures should be substituted. The number of days of man labor and horse labor is approximately correct for the conditions named under each chart, but will vary somewhat under changed conditions.

[3] The charge for "Paid manager" should include the value of the perquisites which the farm furnishes in addition to the salary.

[4] The word implement includes tools and machinery.

Even under these circumstances the table figures may be used as a basis for estimating the true figures.

Every item in the foregoing form is virtually a variable item. Nothing is constant or absolutely true for all cases. The best one can do is to fill out the skeleton to the best of his ability, but it is certainly a help to have the labor data at hand, because the cost of man labor, plus horse labor, constitutes a large part of the cost of production.

SUPPLEMENTARY FORM FOR COST ACCOUNTING.

To facilitate the calculation of cost where yields, soil, season, and other factors are different from the assumption on which the tables and charts are based, the following supplementary form is provided.

Yield per acre, first product[5] .....

Yield per acre, second product .....

Relation of actual yield to assumed yield (Table 2) expressed in percentage .....

Man days per acre of crop, except contract:

Before harvest[6] .....

Harvest, haul, etc.[7] .....

Extra[8] .....

Man days per acre of crop, except contract. Total .....

Horse days per acre:

Before harvest[6] .....

Harvest, haul, etc.[7] .....

Extra[8] .....

Horse days per acre. Total .....

---

[5] In case of cotton, lint is the first product and seed is the second; in case of wheat, grain is the first product and straw the second.

[6] The labor for the standard or assumed yields will be found under each chart given separately by operations.

[7] To be obtained by multiplying the figures in the tables contained in the legends by the "Relation of actual yield to assumed yield, expressed in percentage," except that for grain and hay crops the following rules may be used:

Wheat, Washington County, for harvesting and threshing: Add or subtract 0.18 man day and 0.14 horse day for each acre for each 5 bushels above or below 15 bushels per acre.

Wheat, Clay County, for harvesting and threshing: Add or subtract 0.2 man day and 0.18 horse day for each 5 bushels above or below 15 bushels per acre.

Spring oats, Washington County, for harvesting and threshing: Add or subtract 0.18 man day and 0.14 horse day for each acre for each 10 bushels above or below 30 bushels per acre.

Fall oats, Pulaski County, for harvesting and threshing: Add or subtract 0.28 man day and 0.22 horse day for each acre, for each 10 bushels above or below 30 bushels per acre.

Alfalfa, 5 cuttings, Mississippi County, for harvesting and hauling to storage: Add or subtract 0.4 man day and 0.3 horse day for each acre, for each half ton above or below 3½ tons per acre.

Bermuda hay, 2 cuttings, Faulkner County, for harvesting, baling and hauling to storage: Add or subtract 0.5 man day and 0.4 horse day for each half ton above or below 2 tons per acre.

Clover, 2 cuttings, Washington County, for harvesting and hauling to storage: Add or subtract 0.3 man day and 0.2 horse day for each half ton above or below 1½ tons per acre.

Clover timothy, Washington County, for harvesting and hauling to storage: Add or subtract 0.13 man day and 0.08 horse day for each acre for each fourth of a ton above or below 1 ton per acre.

First year timothy, Clay County, for harvesting, baling and hauling to storage: Add or subtract 0.25 man day and 0.2 horse day for each acre for each fourth of a ton above or below 1 ton per acre.

Cowpea hay, Pulaski County, for harvesting and hauling to storage: Add or subtract 0.15 man day and 0.09 horse day for each acre, for each fourth of a ton above or below 1 ton per acre.

Lespedeza, same as for cowpea hay.

[8] By "extra" is meant the number of days above the chart figures required because of modifications for soil, season, weeds, stumps, or stones.

IMPROVEMENT OF CROP SYSTEMS.

An important purpose of the preceding labor data and charts is to enable farmers, county agents, and others to plan crop systems or to amend existing systems, so that the time of men and teams may be utilized to better advantage, to the end that the income from labor and management be increased and the cost of production be decreased.

Every crop has its peak loads of labor in certain months, and these are shown graphically in the charts. The conflict of labor between certain crops can be seen plainly and can be measurably avoided by a proper planning of the crop system. Such planning will increase the number of day's work obtained per man and per horse in a year on crop work, or, if there is a livestock industry, it will enable a farmer to fit the crop and animal enterprises together more advantageously. This will tend toward increased efficiency of labor. Planning will also increase the size of the business. It will enable a farmer with a given supply of labor and equipment to handle a larger acreage without lowering the quality of his work, and this in turn will increase his income with very little extra expense for man and horse labor.

Properly planned crop systems will reduce the cost of horse labor per day and the implement charge per day of use, because both horses and implements will be used more days in a year. Furthermore, plenty of feed will be furnished for the farm animals. It would be difficult in the cotton country to devise a crop system that utilizes labor well that does not furnish plenty of feed for home use.

Summing up the advantages of crop systems which utilize labor to the best advantage it may be said that:

The efficiency of labor is increased.
The size of the business for a given equipment is increased.
There is a tendency toward increased yields.
The unit cost of man labor, horse labor, and implement service is reduced.
Plenty of feed for home use is provided.

HOW TO CALCULATE CROP SYSTEMS FROM THE LABOR STANDPOINT.

FOR 36 ACRES OF LAND.

As an example, the labor on crops that can be tended by a team of two horses will be calculated. The crops are as follows:

	Acres.
Cotton	15
Corn	15
Winter oats	5
Cowpeas (after oats)	5
Sweet potatoes	1
Total of crops on 36 acres of land	41

Data from Pulaski County are used for cotton, corn, oats, and cowpeas and from Columbia County for sweet potatoes. The latter data might also be taken from Washington County. The difference between the labor on sweet potatoes in the two counties would be about the same as on cotton between Columbia and Pulaski Counties.

CALCULATION OF MAN LABOR.

The calculation of man labor on these crops is as follows:

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
	Days.	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*	*Days.*
15 acres cotton, 1½ times the figures on p. 7	9	4.5	4.5	7.5	28.5	25.5	21.0	.....	12.0	25.5	18.0	10.5
15 acres corn, 1½ times the figures on p. 7	3	6.0	7.5	10.5	13.5	4.5	.....	.....	.....	10.5	.....	.....
5 acres fall oats, one-half of figures on p. 8	.....	.....	.....	.....	.5	5.0	.....	.....	3.0	1.5	.....	.....
5 acres late cowpeas, one-half of figures on p. 8	.....	.....	.....	.....	.....	2.0	3.0	.....	2.0	2.0	.....	.....
1 acre sweet potatoes, one-tenth of figures on p. 8	.....	.25	.45	.45	1.9	2.1	.4	.....	.....	3.8	.....	.....
Total	12.0	10.75	12.45	18.45	44.4	39.1	24.4	.....	17.0	43.3	18.0	10.5

The grand total for the year is 250.35 man days.

The assumed yields for these crops are stated in Table 2. If the yields are much larger or smaller it will necessitate some changes in the number of days of labor at harvest time.

With this crop system the work would be heavy in May and June and again in October, and there would be no work in August. The 44.4 days of labor in May would be equal to the work of two men for 22.2 days. It is doubtful whether two men could do this work, however, because after taking out Sundays and rainy days there would ordinarily be only 20 days available for crop labor.

TIME AVAILABLE FOR CROP WORK.

A fair average of time available for crop work in Arkansas in various months is as follows: January, 10 days; February, 10 days; March, 15 days; April, 18 days; May, 20 days; June, 20 days; July, 20 days; August, 20 days; September, 20 days; October, 20 days; November, 15 days, and December, 12 days. Total, 200 days.

CALCULATION OF HORSE LABOR.

The same method would be used in calculating horse labor, and the same form of sheet will answer for both. It will not be necessary to give the calculation in detail, but the results in days of horse labor are as follows: January, 13.5 days; February, 20 days: March, 24.55 days; April, 26.3 days; May, 28.25 days; June, 31.8 days; July, 19.3 days; August, none; September, 11.5 days; October, 19.1 days; November, 3 days; December, 1.5 days. Total, 198.8 days.

The busiest month for the horses is June with 31.8 horse days, nearly the equivalent of using two horses for 16 days.

It should be borne in mind that some of the work can be shifted from one month to another if necessary. For instance, in the foregoing problem, if the fall oats were planted after corn it would necessitate putting all the work of preparation in October or possibly part of it in November. Some work on crops is fixed as to date and some is not. The date of harvesting small grain is fixed in time, but the work of hauling manure or plowing for a spring crop may be shifted from fall to spring or from spring to fall.

It will be helpful in calculating such a shift to note the amount of labor by operations. The work of preparation and planting is a certain amount of work, but is not always fixed as to date.

An illustration of using common sense in shifting work from one month to another is shown in calculating the horse work on 20 acres

of corn and 20 acres of spring oats in northwestern Arkansas. According to Table 3, no work would be required in December, 10 horse days would be required in January, and 37 horse days in February, which would be equal to the work of a 2-horse team for 5 days in January and 18½ days in February. The weather in February, however, usually does not permit that many days of field work. Must we, therefore, conclude that one team can not handle that number of acres? No, indeed. Much of the plowing can be shifted back to January, December, or even to November and the thing will work out right. One team of 2 horses can handle 30 acres of corn, 10 acres of oats, and 20 acres of wheat in northwest Arkansas, but it would be better business to handle 45 acres of corn, 15 acres of oats, and 30 acres of wheat with 3 horses.

If the man labor and horse labor on any combination of crops are charted according to the data found in Table 3, on the model of those shown in this bulletin, it can be seen at a glance whether or not any of the labor can be shifted from one month to another to advantage.

FOR 45 ACRES OF LAND.

A second problem will fix the method in mind and will show a combination of crops in which the labor is more evenly distributed. The crops assumed for a 2-horse farm are as follows:

	Acres.
Cotton	10
Corn	10
Rye pasture (after corn)	10
Early cowpeas	10
Fall oats	10
Late cowpeas (after oats)	10
Sweet potatoes	1
Elberta peaches	2
Grapes	2
Total of crops and pasture on 45 acres of land	65

CALCULATION OF MAN LABOR.

The calculation of the man labor for these crops is as follows:

	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
10 acres cotton, Pulaski, from p. 7	6.0	3.0	3.0	5.0	19.0	17.0	14.0	.....	8.0	17.0	12.0	7.0
10 acres corn, Pulaski, from p. 7	2.0	4.0	5.0	7.0	9.0	3.0	.....	.....	.....	7.0	.....	.....
10 acres rye-substitute wheat figures before harvest p. 20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	9.5	.....
10 acres early cowpeas, Pulaski, from p. 8	.....	.....	.....	6.0	4.0	.....	.....	8.0	.....	.....	.....	.....
10 acres fall oats, Pulaski, from p. 8	.....	.....	.....	.....	1.0	10.0	.....	.....	6.0	3.0	.....	.....
10 acres late cowpeas, Pulaski, from p. 8	.....	.....	.....	.....	.....	4.0	6.0	.....	4.0	4.0	.....	.....
1 acre sweet potatoes, one-tenth of data, p. 8	.....	.25	.45	.45	1.9	2.1	.4	.....	.....	3.8	.....	.....
2 acres Elberta peaches, two-tenths of data, p. 8	1.4	1.4	1.8	.6	.8	.8	16.4	.....	.....	2.0	.....	.....
2 acres grapes, two-tenths of data, p. 8	3.4	3.8	4.4	1.2	3.0	2.8	2.0	18.4	.....	.....	1.8	2.6
Total	12.8	12.45	14.65	20.25	38.7	39.7	38.8	26.4	18.0	36.8	23.3	9.6

Total man days equals 291.45.

No figures were obtained for rye after corn but the work of preparation and planting would be equivalent to that on wheat, so the wheat figures for before harvest were substituted and the work placed in November.

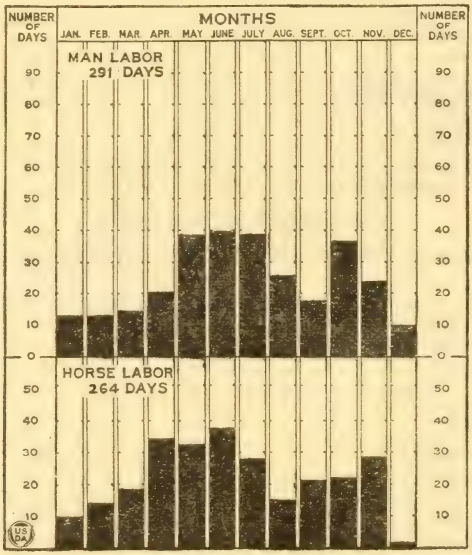
CALCULATION OF HORSE LABOR.

The horse labor on these crops is calculated in the same way and the total horse days by months is as follows: January, 9.6 days; February, 14.1 days; March 18.95 days; April, 34.2 days; May, 32.35 days; June, 38 days; July, 28.5 days; August, 15.2 days; September, 21 days; October, 21.6 days; November, 29.2 days; December, 1.2 days. Total 263.9 days. This is equivalent to the work of one team for about 132 days.

Comparing this combination of crops with the one previously given it is found that the peak loads of labor are not quite so high, but the total man labor is about 41 days more. The peak load of horse labor is a little greater in certain months, but is within the limits of available time for two horses and the total horse days for the year is 65 more than in the other case.

This combination of crops also occupies 45 acres of land compared with 36 acres in the other combination, and it provides more feed stuff than the other. Forty acres of this combination may be run as a four-year rotation in which corn follows cotton, rye pasture follows corn, early cowpeas for hay follow rye pasture, fall oats follow early cowpeas, and late cowpeas follow fall oats as a second crop. Then the rotation begins over again with cotton.

The labor for this combination of crops is shown in Figure 51.



LABOR DATA CONDENSED.

In addition to the foregoing labor data, it is desirable to present a table showing the total quantity of man labor and horse labor on the 1-acre basis. This table is arranged in the descending order of the quantity of man labor required and includes a statement as to whether the work of hauling to market is included or excluded.

In the case of feed crops, second crop potatoes, and sorghum sirup made up at home, the work of hauling to market is not in-

cluded. As it may be done at any time of the year, it can not be charted by months. The work of hauling and applying stable manure is not included for any crops except radishes, cucumbers, muskmelons, and for the watermelon crop in Crawford County.

Arranging the labor data in the descending order of man labor gives an excellent chance to compare crops from the standpoint of labor, but this table should be supplemented with the labor data by months as given throughout the bulletin. For assumed yields of the following crops see Table 2.

TABLE 4.—*Labor requirements for various crops on 1-acre basis.*

Crop.	Section of State.	Man days.	Horse days.	Does data include work of hauling to market?
Cherries	Northwest Arkansas	42.0	9.0	Yes.
Blackberries	do	34.0	5.0	Yes.
Strawberries	do	31.0	3.0	Yes.
Radishes	Hempstead County	30.0	12.0	Yes.
Grapes	Northwest Arkansas	21.7	7.6	Yes.
First-year strawberries	do	16.0	9.0	No marketing.
Cucumbers	Crawford County	15.6	11.8	Yes.
Apples	Northwest Arkansas	14.3	9.2	Yes.
Sorghum sirup	Sebastian County	14.2	8.2	No.
Muskmelons	Crawford County	13.5	8.6	Yes.[1]
Cannery tomatoes	Northwest Arkansas	13.1	8.2	Yes.
Peaches	Pike County	12.6	5.2	Yes.
Sweet potatoes	Northwest Arkansas	12.5	7.6	Yes.
Pears	Sebastian County	12.0	6.0	Yes.
Cotton	Mississippi County	11.9	5.2	[2]
Do	Chicot County	11.7	5.2	[2]
Muskmelons	Hempstead County	11.5	9.5	[1]
Cotton	Pulaski County	11.1	5.5	[2]
Do	Crawford County	9.5	5.5	[2]
Do	Columbia County	9.4	4.3	[2]
Sweet potatoes	do	9.4	6.3	Yes.
Watermelons	Hempstead County	7.7	7.8	Yes.
Do	Crawford County	7.5	7.3	Yes.
First-crop potatoes	Sebastian County	7.3	7.4	Yes.
First-year blackberries	Northwest Arkansas	6.1	4.6	No marketing.
Second-crop potatoes	Sebastian County	5.5	5.0	No.
Sorghum for factory	do	5.3	6.2	Yes.
Peanuts	Miller County	5.3	5.0	Yes.
Corn, shocked and shucked	Northwest Arkansas	5.1	5.5	No.
Corn silage	do	4.8	6.3	No.
Rice	Eastern Arkansas	4.6	6.3	Yes.
Oats followed by cowpeas	Pulaski County	3.8	6.7	No.
Corn	do	3.7	5.1	No.
Alfalfa	Mississippi County	3.6	4.1	No.
Corn	do	3.4	5.4	No.
Do	Chicot County	3.4	4.7	No.
Do	Columbia County	3.35	3.85	No.
Oats and lespedeza	Southern Arkansas	3.3	5.0	No.
Corn	Northwest Arkansas	3.1	5.2	No.
June corn	Pulaski County	2.9	4.2	No.
First-year timothy	Northwest Arkansas	2.4	3.8	[3]
Bermuda hay	Faulkner County	2.4	2.4	[3]
Soybeans for seed	Ashley County	2.1	3.0	No.
Fall oats	Pulaski County	2.0	3.5	No.
Cowpea hay	do	1.8	3.2	No.
Wheat after oats	Northwest Arkansas	1.65	3.4	No.
Red clover cut twice	do	1.6	1.6	No.
Spring oats	do	1.55	2.9	No.
Wheat after cowpeas	Northeast Arkansas	1.4	2.9	No.
Lespedeza	Southeast Arkansas	1.3	1.5	No.
Clover and timothy	Northwest Arkansas	1.0	1.0	No.

[1] In Crawford County the work of packing the cantaloupes in the field is included but in Hempstead County the packing is done by contract in the association sheds, hence is not included in the figures.

[2] The work on cotton includes hauling to the gin and the crop may or may not be marketed on the same trip.

[3] The work of baling in the field is included. The data for other kinds of hay are for loose hay, stored in barn or stack.

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October 20, 1928.

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